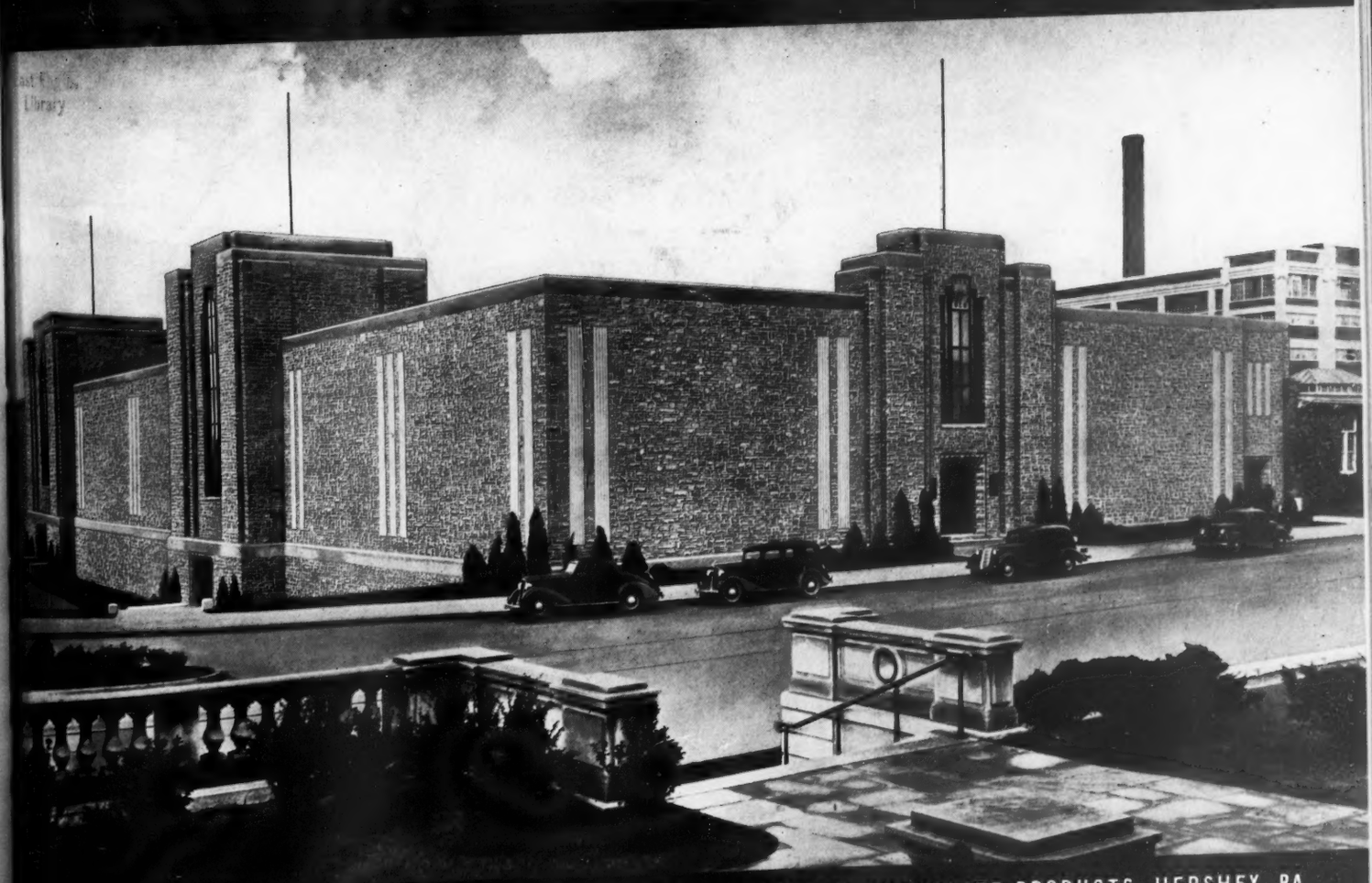
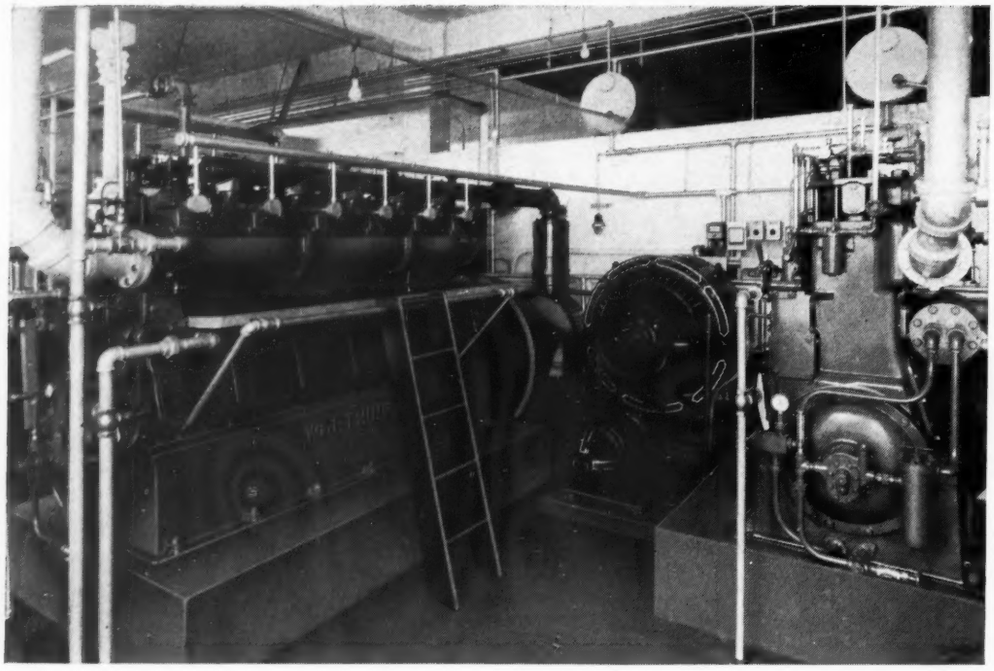
FOOD INDUSTRIES

MARCH 1939



HOMES OF FAMOUS FOODS... HERSHEY'S CHOCOLATE PRODUCTS, HERSHEY, PA.



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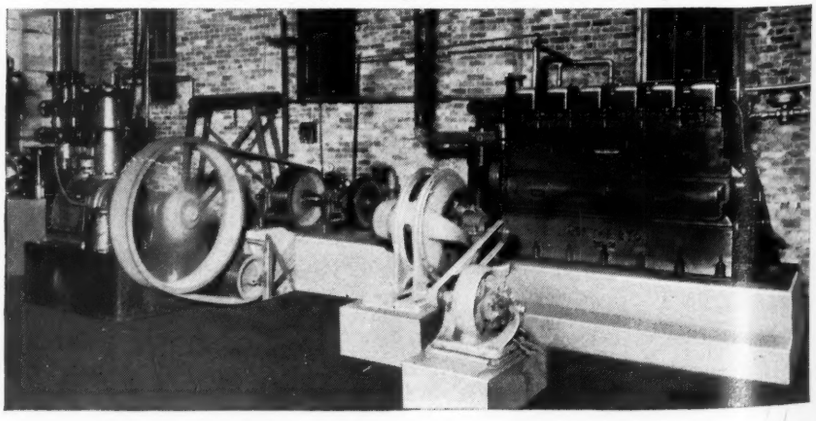

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★HOMES OF FAMOUS FOODS

On *Food Industries'* cover this month is shown the widely known plant at Hershey, Pa., where Hershey Chocolate Corp. produces chocolate products and confections. A feature is the fully air conditioned and windowless plant office building.

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NEW YORK TUNNEL TRAFFIC

MUST KEEP MOVING

One of the specially-built Mack Trucks on duty at Lincoln Tunnel, New York City side. It pushes, pulls, hoists, fights fires. Texaco fueled and lubricated 100%.

DURING RUSH HOURS in the Holland and Lincoln Tunnels, cars, trucks and buses enter bumper to bumper. Traffic averages thousands of vehicles a day.

It's the job of the emergency vehicles shown here to keep these tunnels cleared, regardless. So they're built to drag, push, hoist, carry out the cripples, put out fires.

They can't break down or quit. And they don't . . . each and every one is fueled and lubricated with TEXACO.

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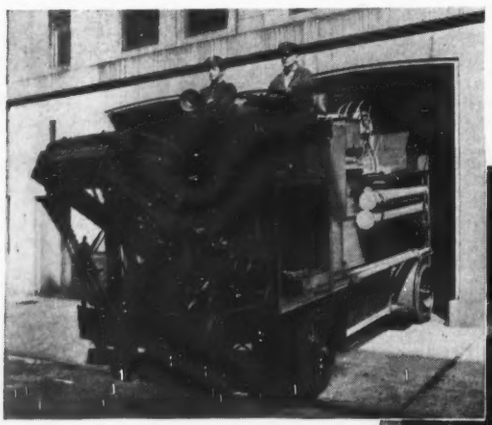
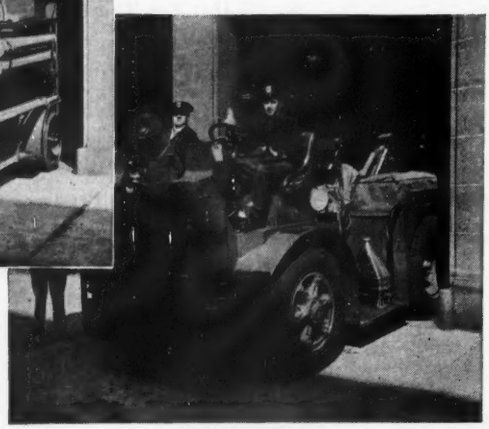
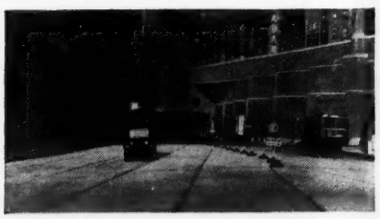


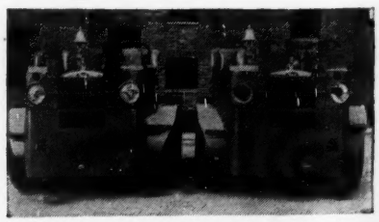
(Left). The original emergency truck of the Holland Tunnel under the Hudson River. This vehicle operates from either end, like a trolley car. It is lubricated with Texaco Marfak and Thuban.



(Right). The latest Holland Tunnel emergency truck. It's a Mack and is equipped with everything. Most important — it's fueled and lubricated with Texaco.



New York City end of Lincoln Tunnel underneath the Hudson River. Vehicles go both ways, as but one tunnel is in operation at present.



Front view of emergency Macks, showing their broad boiler-plate fronts for pushing crippled vehicles out of the stream of traffic. All Holland and Lincoln Tunnel equipment is completely Texaco fueled and lubricated.

TEXACO

TEXACO REG T M

Texaco Dealers invite you to tune in The Texaco Star Theatre—a full hour of all-star entertainment—Every Wednesday Night—Columbia Network—9:00 E.S.T., 8:00 C.S.T., 7:00 M.S.T., 6:00 P.S.T.

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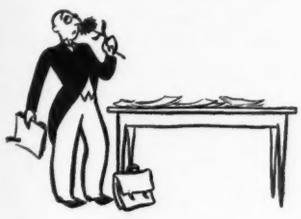
LAURENCE V. BURTON, Editor
Volume 11, Number 3 March 1939

The Talk of the Industry

» THE CORRECT DEFINITION of the confusing phrase "area of production" in the Wages and Hours Law is said to be "the area of confusion."

» How times have changed! Time was when hard work, and lots of it, plus ability to see an opportunity, was the way to success. But now, alas, Elmer F. Andrews, administrator of the Wage-Hour Law, says that the employee who works overtime without consent should be discharged.

» CHEMISTS who knew their enzymes were much amused at a government attorney's references to "oxy-daisies" during one of the recent food standards hearings. Which calls to mind the great scarcity of attorneys who know anything but the law. If an able



attorney also knows engineering, chemistry, bacteriology, medicine, foods, metallurgy, or some other active profession, he has very little competition. And he has a tremendous advantage in litigation.

» CALVIN COOLIDGE once said the trouble with farm leaders and farm bloc congressmen was any one of them would rather the problem go unsolved than that anyone else should solve it.

More recently William Allen White remarked that 40 years from now we will still have the farm problem on our hand, unsolved.

Willard Thorp, economist for Dun and Bradstreet, pointed out to the monopoly committee that the anti-trust laws had resulted in huge combinations of business. By combining, a group of small units avoid the penalties in the laws for conspiring as to prices and allocations of territory.

Put these three together, the human vanity and ambition hurdle, the genuine difficulty of the problem, and the surprising results which so frequently follow attempts to interfere with natural laws by man-made edicts, and the wonder that Henry Wallace's presidential ambitions—once so bright—have become tarnished, disappears.

Take subsidized exports, for instance, smacking of the old McNary-Haugen plan which seemed so crackpot back in the Coolidge days, and so intelligent, by comparison, now. Wallace was going to do wonders with that "two price system." But one shipment to England and the whole thing blows up. Britain is assured there won't be any more. French Guiana, in retaliation, closes her markets to our grain, etc.

Time was when really low prices encouraged consumption, wiped out the surplus in any given commodity. Tough on the producers? Terrible! But some of them would thus be forced to turn to something the consumers really want. Workable? No. It interferes with collective bargaining in industries which make things the farmers buy—and sell. Messes up the graphs showing the plight of the underprivileged. In fact it's pretty nearly Fascism.

» A SINGLE GRACIOUS GESTURE toward industry, though commendable, does not constitute good public relations, any more than does lifting one's hat to a lady before jabbing her with one's elbow constitutes good manners. So

when a large corporate chain gives a first day glad-eye to a manufacturers' convention by distributing free copies of the daily newspaper at everybody's hotel room door, the manufacturers could hardly wait for the second day to see what the next joyous message would be. They are still waiting.

» AS A RULE we are opposed to state laws which are designed to prevent some competing food from enjoying any sales whatever. The basis for such opposition is nothing more than an admiration for intellectual honesty. Yet there are moments when our prejudices come to the fore as, for example, when the legislature of Maine considers a bill to make it illegal to put tomatoes into clam

chowder. For, next to *good* Philadelphia scrapple, we place *good* Maine style clam chowder in our gustatory esteem. Not because of any lack of appreciation of the tomato do we prefer Maine style to Manhattan style clam chowder. Rather it is because only one who knows how to do a good job of it would ever dare to put out the Maine style. But there are plenty of dubs who will tackle the Manhattan style and put out an unworthy red watery mess, lacking in flavor, body *and clams.*

Though we acclaim the Maine bill for the short pull, it would be more constructive to establish a suitable standard of quality for the variety of clam chowder containing tomatoes. It can be made superlatively good, though we have encountered it only once in a lifetime.

Put Him In Overalls

WE DON'T MEAN overalls literally for all plants. But we do mean the figurative equivalent of the overalls, the frock, the uniform or the costume which the folks who really work with physical effort must wear in order to do the job in your food plant.

And "him" is the young college graduate. He may come to you for a "position"; but what he really needs first is a "job". Such a young man has generally been educated in certain parts of science and engineering, and he knows somewhat of the *why* you do many things about the works. But, at the outset he often will not know *how* to do it at all. Before his "why" knowledge is very valuable to you, as it may be later, the novice needs a sympathetically guided chance to learn the way the works really carries on.

Pick the best fatherly supervisor you have, and put the college graduate under him. Some day, when he has learned a bit of the plant method and its limitations, he will be a valuable man for leadership himself.

Meantime, let him work at a job. Even a hard and dirty one won't do him any harm.

Hors d'Oeuvres

• In the rodent, chronic riboflavin deficiency often is accompanied by pediculosis. Or rats which don't get enough vitamin B_2 in their food are likely to have lice and skin disease. Aren't words wonderful?

• *A concrete mixer was used to beat the batter for 205,000 flapjacks served during a festival at Winona, Minn. Which reverses the usual procedure of mixing concrete in the flapjack mixer.*

• "A Suggested Gourmet's Code of Modern Dining" has been prepared by the Gourmet Society, New York. According to it, "A gourmet is not an esoteric food sniffer, or food gobbler, or food showoff or food snob. He is a person with an educated palate . . . He is a good adventurer, eager, interested explorer and learner; a distinct food cosmopolite and a respector of all kinds of good food . . . He observes some fairly definite standards . . . " (Thirty standards are given). You may be a gourmet in your own mind, but are you one by the Culbertson system?

• *At the Golden Gate Exposition, hot dog stands were installed in front of the foreign buildings. But foreign representatives objected that it was an insult to their national honor. Thereby insulting 130,000,000 Americans.*

• Wage-Hour Administrator Andrews ruled recently that within the meaning of Section 7 (B) (3) of the Fair Labor Standards Act, the business of harvesting natural ice is a seasonal industry. Must have taken lots of forethought and courage to make such a profound and far reaching decision.

• *Exhibited at the first canners convention 52 years ago was a revolutionary new method of cooking—the closed retort. The first crude sanitary can making machinery appeared in 1901, and five more years elapsed before a really efficient corn husker was offered. But don't laugh, maybe your plant will be obsolete before you get it paid for.*

• The Rural Electrification Administration received recently an egg shaped like an electric light bulb. This was laid by a hen which had stared continuously at an electric light in the henhouse. Which shows what you can do if you concentrate.

• *Latest re-use for glass containers is in feminine headgear. A jelly glass trimmed with flowers, set on a thing that looks like a doily, perched on one corner of the head and held on by a band around the back of the cranium is the trick. Silly? Yes, but not sillier than two out of three hats your wife wears.*

• Ricardo Jimenez, 78-year old gentleman who used to be president of Costa Rica, now makes a living by operating a dairy. Maybe it won't be necessary for President Roosevelt to run for a third term after all.

—F.K.L.

Weaknesses of Retail Selling

MOST EXECUTIVES of today gained their business experience (save for 1930–39) in boom periods. The younger men who have known nothing but tough going are the chief hope of the future. But everybody has a lot to learn about how to manage a business in these days. The experiment of a certain wealthy man bears this out. At a time during the depression when salaries were made public he received $70,000 a year. So he could be regarded as well-heeled.

Just to test out American selling ability he walked all the way through New York's largest department store, looking at this or that which struck his fancy. His experiment was nothing more than a fixed intention *to buy anything that he was asked to buy.* It took a lot of nerve, for that store carries all manner of costly merchandise: fur coats up to $5,000, diamonds up to $10,000 and so on.

After his tour of the store was complete, he found he had bought only $200 worth of merchandise. Very few people had asked him to buy.

What Is Your Label Problem?

AT THE PACKAGING CONFERENCE, March 7, Astor Hotel, N. Y., there to be a session devoted to the subject of what the new Food, Drug, and Cosmetic Law means to packaging and labeling. This department has been inveigled into being chairman of the session. Which means that Queensbury rules will be rigidly enforced.

If you cannot attend in person, please rush your suggestions or perplexities that ought to be discussed from the floor. Use air mail, special delivery. Address the editor of FOOD INDUSTRIES, 330 West 42d St., New York. The time is woefully short.

Those who want expert legal comment on labels must *bring the actual package to the meeting.* Even if you plan to be present, better mail your questions in advance.

Food Standards Hearings To Go on for Years

HEARINGS on new standards of identity under the new food and drug law are now going on in Washington. Everyone who expects to be heard at some future date would do well to look in on an earlier hearing to get the hang of the procedure.

Unless the procedure changes you will be impressed by the extreme lib-

erality and courtesy shown to all who want to present their case. You will probably also be impressed by the poor showing made by non-technical witnesses. For these are hearings on scientific definitions, very technical and often highly controversial in character. If you are going to speak your piece before the presiding officer, you should be able to present facts—indisputable facts and scientific evidence. Opinions, likes or dislikes, when unsupported by evidence are likely to be stricken out of record. Or carry no weight at all.

Purpose of Testimony

The purpose of the testimony is to lay before the Secretary of Agriculture the necessary evidence on which to base a definition of identity of a food. Representatives of the Food and Drug Administration and of the Committee on Food Standards are there to propose their version of a desirable definition based on some 30 years of regulatory experience. And they have plenty of facts, factory observations, and chemical analyses.

As an interested party, you will be permitted to cross examine the government's witnesses, and in time you will be allowed to testify on your own behalf. But, keep in mind that you, too, will be cross examined by government attorneys and by government chemists. And you will also be cross examined by your competitors and professional consumers who may be in the audience.

Should you choose to appear as a witness, be sure that you can qualify as an expert witness who has an actual first hand knowledge of the food under discussion. A representative, be he lawyer, chemist, or layman, who doesn't know his stuff, will be deflated just as surely as if he were an expert witness in a lawsuit under drastic cross examination.

If you choose to be represented only by affidavit or written testimony, let it be all factual scientific evidence, for the written word cannot be cross examined to bring out missing data.

Technical Witnesses Best

It is a point of law that your evidence at the hearing should be very complete. And unless you have the evidence in the record, you cannot take future action in the Court of Appeals to compel the Secretary to promulgate a *reasonable* standard. If the published proposed standard is one with which you disagree, your proper move is to anticipate such an appeal at the hearing. Here is where competent legal counsel is of great help. But unless your company lawyer is also a competent expert on the food itself, his appearance as a witness may not help at all.

Hearings start in the morning and often run on until late at night. Eleven p.m. is the usual closing hour. There is not a chance in the world for completion of hearings on all foods by June 25, 1939. On the contrary, it is expected that food standard hearings will be going on for a minimum of two years, possibly even five years. One despairing official remarked after the first four days that at the present rate his successor would grow old and die in the service before the final hearing closed.

Anyone who has observed Mr. Fox as presiding officer, representing the Secretary of Agriculture, will agree that his conduct of this new and difficult procedure has been most courteous, liberal, judicial, and dignified. No witness can complain that he did not have every opportunity to adduce his testimony.

Even some very ill-informed consumer witnesses who objected to sodium bicarbonate in foods, apparently in the mistaken belief that it is a chemical preservative, were treated as courteously as the scientific experts.

Straws in the Wind

REPORTED ACTIVITIES of Secretary of Commerce, Harry E. Hopkins, since the resignation of Commissioner of Fisheries, Frank T. Bell, are not very reassuring. It was hoped that Mr. Hopkins would turn his tremendous energy to reviving business confidence. Yet, when Mr. Bell resigned, it is said that Secretary Hopkins has sought to replace him with a wealthy sports fisherman who would be the fishing companion of the Great White Father on his few remaining costly battleship rides, and also attract the politically important group of amateur anglers.

If Mr. Hopkin's concept of his function as Secretary of Commerce continues along these lines, he will have lost the big chance. Even though Ex-commissioner Bell may not rate as a great Commissioner of Fisheries, he was fully cognizant of the problems of the huge industries based on the commercial products of the sea: Salmon, tuna, shrimp, oysters, mackerel, cod, haddock, lobster, sardine, clams, crabs—to mention only a few of the sea-food resources. Fortunately for the foregoing industries no wealthy sports fisherman has accepted the nomination up to the moment of writing.

The job calls for an able business executive of broad mind and training.

Suggestion for Tomato Quality Control

AFTER LISTENING to some very convincing scientific testimony at the hearings on standards of identity of tomato products, it has been borne in on us that pectinmethoxylase in tomatoes is a pretty bad acting enzyme and deserves much more investigation as to its industrial significance. Pectinmethoxylase, an enzyme of tomato, was discovered only in 1937 by Dr. Z. I. Kertesz of New York Agricultural Experiment Station (see FOOD INDUSTRIES 9, 605, 1937). It becomes active only after injury to the fruit. And, if the fruit is crushed, the pectin disappears in only four minutes! Fast work, that.

If this pectin destruction occurs after crushing, will it not also occur with equal rapidity in the region of every knife-cut, bruise or other wound in a tomato? The question deserves an answer, for it has a very practical application in canning factory methods if the answer is in the affirmative. Hence it is urged that plans be made for early study of this feature. It holds the theoretical possibility of considerable improvement in the quality of canned tomatoes by avoiding the structural breakdown so characteristic of the grade known as standard quality.

An Experiment—Do You Like It

ELSEWHERE in this issue is published an anonymous symposium on mistakes. The mistakes happen to deal with packaging. They could equally well be about mistakes in public relations, quality control, waste disposal, or any other aspect of food manufacture. Each one comes from some reliable person who was close to the trouble and knows what it's all about, though he remains anonymous.

For the first time in our own experience, and one of the first times in publishing, we have devoted a considerable space to failures and the reasons why they occurred. Also to the remedies utilized. It is a wholly new approach. Usually we learn about failures and mistakes only by word of mouth.

Question with the editors is: Do you like this approach? Do you feel that you learn as much (or more or less) by studying failures as you learn by studying successes. Shall we do more of it? Please write your reaction to the editors.

What About That DEADLINE AT FORTY?

Needs of production economy as well as of good public relations justify employment of older workers

By ***EDWIN LAIRD CADY***
New York, N. Y.

THAT fatal fortieth birthday! Everybody is wondering what to do about the worker who has passed it. Government agencies are making special surveys, labor unions are applying their best engineering brains, endowed foundations are spending huge sums, and factories are segregating specially operated departments, all to take care of the older employee problem. From all of these efforts, useful facts are emerging.

Perhaps the most interesting fact is that many managements forget that the controls of modern machines need more of exact attention than of nervous energy. Employers overlook the peculiar athletic records which show that although younger men win the hundred yard dashes, the long distance walking champions are almost all over 50 years old. Supervisors forget that most accidents to men and damages to machines and to products happen in the closing or "tired" hours—the times when the endurance and the steadiness of the older worker are at their best advantage and the faults peculiar to the younger worker are at their worst. In too many personnel departments, the accent is on youth when it should be on production.

The older worker has handicaps, too. For many tasks the younger worker is far superior. But the point is, for the sake of profits as well as justice, the older worker ought to be weighed in impartial scales with all of the pertinent factors placed on the balances.

Whether or not the older worker produces as much as the younger one, may depend upon steadiness of employment. Where employment is steady, the older worker is apt to have a higher rate of average daily or weekly production than his younger rival. Almost every well established plant has a few older workers who are setting paces which the younger ones find it hard to follow. The trouble is, these old veterans have been around so long that no one notices how well they are doing. Their weight is left out of the scale when the older worker problem is being discussed.

Effect of Seasonal Work

Where work is seasonal, the older worker loses skill faster during layoffs. It takes him longer to get back up to speed upon re-employment. His muscles are slower to get back into condition. And where seasons of employment are short and frequent, this can be a severe handicap.

The older worker lessens the costs of supervision. He reduces the need for direct supervision. Even more important, he pares down those hidden costs which are sometimes called "inadvertent sabotage."

He is cooperative, does as he is told, obeys the spirit as well as the letter of orders, is conscientious, and does not interrupt his production for such diversions as skylarking and gossip. He is not easily discouraged, and does not have to be continually "pepped up" when the work is a little unpleasant. He does not dodge unpleasant assignments, nor sulk or shirk when he gets them.

He is apt to be slower than younger men to grasp new incentive systems. By the time a man reaches 40, his character is well developed, and his is less plastic and more of a fixed personality than a younger person. He grasps new effort-stimulants more slowly, because his habits are harder to change. But when he does grasp a new system, he uses it with intelligence and sympathy.

He is free from that high cost factor in supervision: the tendency to experiment for the mere fun of trying something new. He will seek out improved methods and try them very cautiously, but he will not experiment merely to satisfy curiosity. Therefore he is a good risk as an operator of expensive, complicated and sensitive machinery.

The costs of training new labor are highest when business is best and workers are needed most. This is because general skilled labor markets are undersupplied for peak needs, and because ambitious young men leave their jobs in good times to seek better ones.

The older worker stands out well here. He sticks to his job. He does not quit and leave a gap which must be filled by training a brand new man for the place.

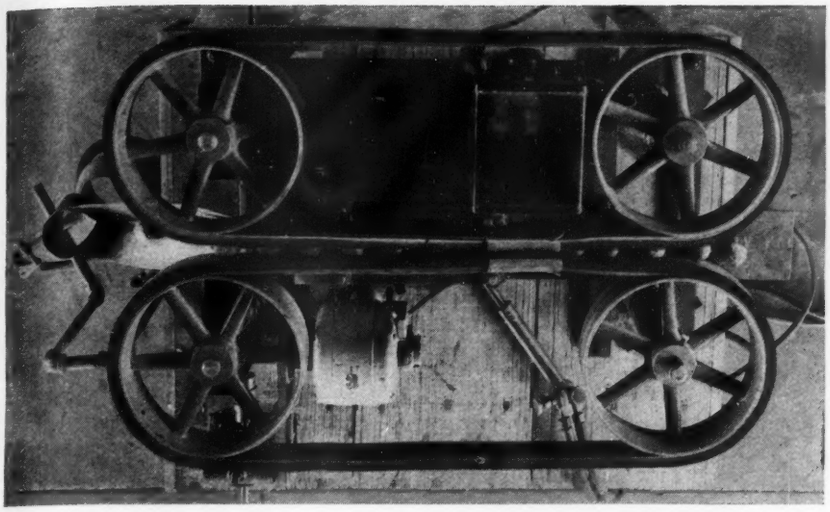
When new methods are adopted, the older worker is quick to learn them. He may be slow to grasp an incentive system, since that requires a change in his way of thinking about his work, but he is quick to grasp a new method which only requires him to add to his skills. He does not insist upon having his own way. He does not cling to disapproved methods. The need to improve is familiar to him. And he has a background of experience which lets him appreciate the value of an improvement. He is able to compare, and therefore easy to train.

New Skills Are Welcomed

The older worker does not have the fear of "looking inferior" which makes so many younger workers hesitate to take new tasks. He knows that the more the kinds of jobs he can swing, the surer he is to keep employed. He is proud of being able to learn a new skill, and unashamed of being for a while less skillful than those working beside him. He welcomes new training.

On the other side of the scale, the older worker does not have the basic

(*Turn to page 171*)



This experimental machine illustrates the new method of cracking nuts. You are looking down onto the parallel belts that grip the nuts and carry them past a small circular saw which cuts a slot in them. Next they slide along a guide rib, sticking into the slot, which has a tiny opening for a jet of mixed oxygen and acetylene coming from the welder's outfit shown. Next the nuts continue to slide along the guide rib in the slot to prevent the gas from leaking out, until they drop in the chute at the right.

Nuts Shelled By EXPLOSION

New machine cracks shell by means of explosive gas, decreases cost of operation and improves quality of product

Here you see the nuts sliding down the chute to fall through a ring of gas flame. The gas inside the shells explodes. The shells crack up and fly mostly to the sides of the guard. The nut meats, 60 per cent of which are whole, drop to the center. Capacity is 900 lb. of shelled meats per hour.

SOME will say it is a far cry from puffed cereals to cracking California walnuts but both now employ the same principle—an internal explosion. In the puffing of cereal the pressure is caused by steam; in the walnut it is an oxy-acetylene explosion. There is this difference, however, the cereal swells up and stays put, but the walnut shell breaks and falls off.

This new and revolutionary method of shelling nuts involves what is probably the first use of internal explosion by combustible gases in food processing. It was developed in the Department of Agricultural Engineering, University of California, Davis, Calif., according to an announcement by Dean C. B. Hutchison of the College of Agriculture. The new machine, called the Internal Combustion Nut Cracker, is being patented by the University which will turn it over to the walnut industry of the state.

Heretofore, walnuts have always been shelled by cracking between blocks, after which the pieces of shell were removed by hand and the meats cleaned for use. The new machine reverses the operation and breaks the shell by force applied from the inside rather than crushing from the outside. The old method of cracking walnuts was slow, expensive and unsatisfactory because it broke a large percentage of the nut meats.

Instead of waiting for some genius to come along and sell them an improved method of cracking nuts, the California Walnut Growers' Association took the problem to the agricultural engineers of the University of California. The point is that the members of the industry took the initiative in demanding a solution instead of patiently waiting for some one else to discover the need and bring the solution to them. When it is realized that the industry cracks millions of pounds of nuts every year, it will be seen that nut-cracking presented a major problem.

After experiments along more obvious lines, attention was turned toward devising a machine that would break the walnut shell by setting up a differential in the pressure between the inside and the outside of the nut. In other words, an attempt was made to break the shell from within rather than by the usual method of crushing it from the outside. This culminated in an experiment made by A. S. Leonard, a temporary employee in the agricultural engineering division, which showed that nuts could be filled with gas and exploded.

The results of the preliminary experiment looked so promising that a machine embodying this principle was built. The purpose of this machine was to cut or puncture the shell, introduce into the nut an explosive gaseous mixture to fill the space between the shell and the meat lobe of the nut, and then to ignite this gas so as to produce an explosion that would shatter and separate the shell from the kernel. The explosive force acts between the nut meat lobe and the shell and, because the latter shatters readily due to the outward forces upon it, little damage is done to the nut kernel.

The device consists of the following elements: Two parallel rubber-faced belts are driven and guided by pulleys

(Turn to page 172)

This *NEW* Packaging Method *Solved Marketing Problems*

Packer brands carcasses, wraps them in cloth and puts them in paper bags to protect quality and gain merchandising advantages

By PAUL C. SMITH

Vice-President, Swift & Co., Chicago, Ill.

▶***Here is a man-made improvement over Nature's way of packaging. Instead of leaving the hide on, the carcass is tightly wrapped and put into a paper bag. And the meat is trademarked before packaging by application of cellulose strips. Not only does this practice preserve the bloom, odor and flavor of the meat, but it provides a more attractive product and one whose quality is assured by a brand. Moreover, there are savings in cost. Such a packaging development merits the attention of***

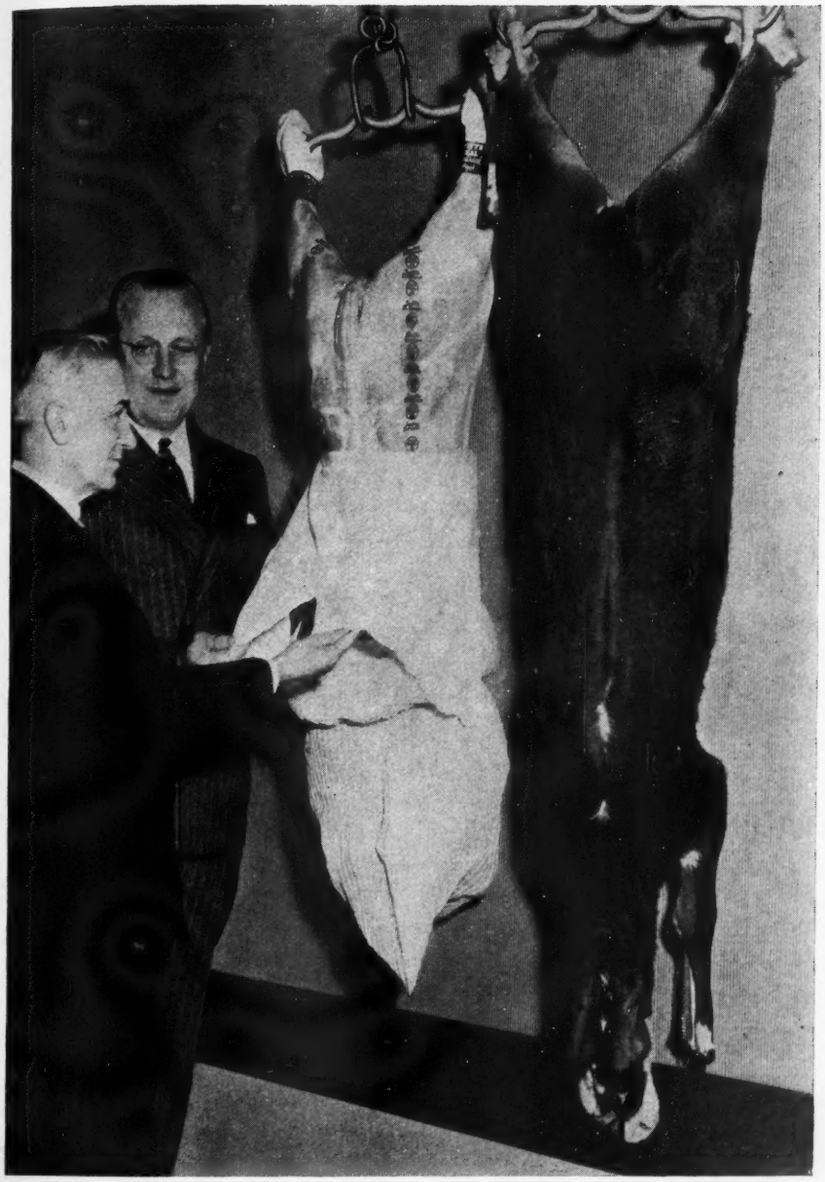
All Food Manufacturers

NEARLY a dozen benefits have been realized by Swift & Co. from a new method of packaging veal and "beevett" carcasses. It took years of experimental work and testing in local markets to perfect the packaging method, but the advantages amply justify the research. For the method, which is a departure from traditional practice, not only has merchandising advantages but results in higher quality in the final product. Nor do the advantages come expensive, because there are effected savings in cost which go a long way toward counterbalancing the additional cost of packaging. And in addition to all this, the method has opened up for beevetts markets which previously were considered impracticable. Beevetts, incidentally, are a new comer to the packing industry. They are small, young, tender beeves, lighter than "baby" beeves.

The packaging method which produces all these advantages consists of a means of protecting the carcass after the hide has been removed at the packing plant, plus a method of labeling the meat for identification by the consumer. The chilled, skinned carcass, after being trademarked, is tightly wrapped with a closely woven cotton cloth. Then the wrapped carcass is covered with a loosely fitting creped waxed paper bag which is closed by rolling at the top and sealing around the hind shanks with tape. The identifying trademarks or brand names are put onto the meat itself by means of patented cellulose strips down each side of the carcass (U. S. Patent No. 2,083,765; Canada Patent No. 431,346). These cellulose strips remain on the meat until it has been cut for retail sale, and even until the meat is actually in the consumer's kitchen preparatory to cooking.

Heretofore, as long as the oldest men in the industry can remember, veal has been shipped from central meat packing plants to refrigerated branch selling houses and to retail outlets with the hides on. This method of handling veal was uneconomical and made skinning necessary either at the sales branch or the retail store. This operation can be carried out better by

When ready for shipment to distant markets, the carcass, tightly wrapped in closely woven cotton cloth, is covered with a waxed paper bag. The bag is closed at top by rolling and by taping around the hind shanks.



Nature's method of packaging veal carcasses contrasted with Swift & Co.'s new technic. Swift removes the hide, brands the chilled meat with cellulose tape or strips, wraps the carcass in trademarked closely woven cotton cloth and covers the whole with a creped waxed paper bag.

skilled workers at the packing plant. Hides removed at the retail markets often are damaged by slits and knife cuts during removal by unskilled hands. Moreover, veal shipped with the hides on carries the skins at fresh-meat rates. Under the new practice, hides are shipped direct to tanners at the less costly hide rate.

An earlier attempt to correct this unsatisfactory situation did not meet with complete success. The method was to skin the veal at the packing plant and cover the carcass with a stockinet bag. But the loose, porous stockinet did not prove a good substitute for the protective hides. Consequently, Swift & Co., set about to find a better way and developed the packaging technic now being used. Known as the "Saniseal Wrapt" method, it is patented in the United States under Patent No. 2,076,053. In associated company plants and in Canada, the method is known as the "Protectoseal Wrapt" and is also patented.

Many are the advantages of the new practice. The closely woven cloth tightly wrapped about the carcass reduces the loss of natural moisture from the meat during transit and handling. The method of enveloping the cloth wrapped carcass in the loosely fitting waxed paper bag permits enough air to reach the inside to keep the veal sweet in odor and flavor, at the same time preventing drying out, discoloration or other deterioration common to unprotected delicate meats. Further, the protective bag, with the intervening layer of quiet air, insulates the meat against sudden or rapid changes in temperature to higher levels in summer and to freezing in winter during temporary exposure to atmospheric conditions.

So effective is this method of packaging that the meats can be shipped farther under refrigeration and held several days longer in a better quality condition than was possible under the old method. Under normal shipping and handling conditions, the meat, when unwrapped in the retail market, is just as fresh in appearance, odor and flavor as it was the day it left the meat packing plant as much as a thousand or more miles away.

The protective feature of this method of packaging fresh meat is of economic importance to the livestock producer as well as to the meat packer. On a glutted market, meats sometimes have to be sold far below cost, not because the product is not as wholesome or as nutritious, but because it has dried out and lost its "bloom." Disposing of the surplus at sacrifice prices not only breaks the market for dressed meat, but also for animals on the live market. When the meat is protected so that its eating period can be extended over a longer time than usual, the uneconomic practice of disposing of these surplus stocks can sometimes be avoided.

ANOTHER marketing advantage of much importance to the packer, retailer and consumer alike is afforded by the protective package. The old hide-on method of protecting the highly perishable veal prevented distinctive labeling or other identification of the meat. And the stockinet method was not sufficiently effective for the meat packer to guarantee the quality condition of the meat to the dealer, much less to the buying public. Veal was veal and every dealer or consumer had to be his own judge of quality. There was no brand assurance of a good quality condition.

But complete trademarking is effected with the new practice. The cellulose brands applied to each side of the carcass accomplish this as far as consumer is concerned. And what these are to the consumer, the printed cloth wrapper is to the dealer. So it is possible to trademark the meat as to grade with assurance that it will be building dealer and consumer good will. For not only is the carcass as a whole branded or trademarked on

(*Turn to page 173*)

Watch Out For These Things In LABEL DESIGN

LABEL DESIGN that ignores production problems never gets a fair chance to show its worth. Plan a label to take advantage of the possibilities and conform to the limitations of present day mechanical operation. The result will be more effective, also more economical.

By WENTWORTH WEEKS
Package Designer, New York, N. Y.

SHORT LIFE, and shorter tempers, of many production men may be directly attributed to the disregard which they receive when new package designs are developed. Few designers trouble to consult production. Advertising and sales state their needs, the designer turns out his conception of the answer, and that's that. The result reaches the production department with a peremptory request for finished packages and a quota of so many per day starting last week.

From the designer's standpoint, with the full support of advertising and sales—until costs begin to mount—appearance is everything. The finished result is the only thing that counts. But to the production man responsible for turning out that result the scope of existing equipment and the economy of an efficient production line are very real indeed.

Not many designers know the possibilities or limitations of automatic labeling equipment. This is unfortunate, but not necessarily to their discredit. Their work deals with many problems in many different fields; and to understand the ins and outs of all would be impossible.

The production department, on the other hand, is sometimes unnecessarily stringent about what can and cannot be done. Naturally, every production man dislikes disturbing an efficiently functioning routine. In his eyes a new design is all very well, providing it can be handled exactly like the old. Concessions on both sides, with due consideration to arguments pro and con *before* a design is started, keep production costs from skyrocketing hand in hand with sales.

It is a peculiar fact that the label which is properly planned for automatic machinery frequently makes a better package. Almost anything a designer wishes to do can be done somehow; sometimes, in spite of any additional costs, it is very worth while doing. But, as a general rule, considering limitations and preparing a design well within them results not only in more efficient operation, but also in improved appearance.

Nothing "worked-over" or "adapted" can compete with correct initial planning. Elaborate and ornate effects may start off with a bang, later to be warped and twisted into a bastard adaptation that any designer would disown when rising production costs require pruning. Others never reach the perfection visualized by their designer, but live out a bedraggled life—smeared, improperly adhering, or out of position—a thorn in the side of the designer's ego and a hair shirt on the back of the production department. Keeping these bounds may hamper a designer to some extent, but overstepping them starts off a hopeful product saddled with unnecessary outlays that make it an easy target for cut-throat competition, in exchange for very dubious advantages.

The container itself must dictate the size, shape, finish and even material used in the label. The designer ignoring the label or the area whereon the label is to be applied when developing a container of any sort is neglecting his work. Some very excellent bottles and jars can be developed, things of beauty and grace in themselves, but pitiful when a label is applied.

ANY package must be considered in its finished aspect with all elements assembled. Closure, container, label, and even carton, are not independent things to be developed separately. They are all parts of the contemplated whole. With a logical conception of their relative importance in relation to one another, it is possible to coordinate label and complete design.

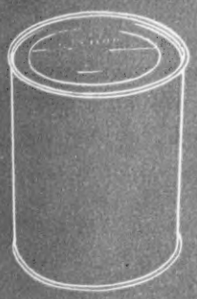
When possible he may even insert a panel to simplify production tasks. Thus an octagonal or hexagonal bottle can carry a curved plane for the label, facilitating label design as well as application. Concave or convex surfaces can flatten out where the label is to appear. A not too definite ridge or surface variation aids the registration of label in proper position. These are matters to be considered in planning or selecting a container.

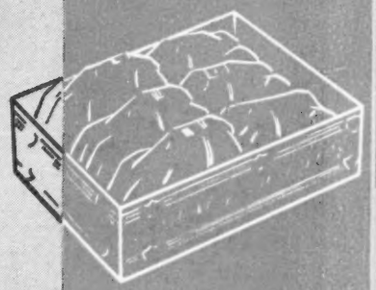
Warped surfaces—that is, surfaces which curve in two directions simultaneously—play the devil with labeling machines. A label may be applied to a flat surface or to a curved surface but that curve can move in only one direction. Upon a warped surface the paper must be forced out of its natural plane with a resulting tendency to bunch and crack. Soaking the label overcomes these tendencies in hand application, but this is slow and costly and not applicable to a straight line production set-up. Sometimes modifying the label shape helps to eliminate this bunching and cracking but the results are seldom satisfactory.

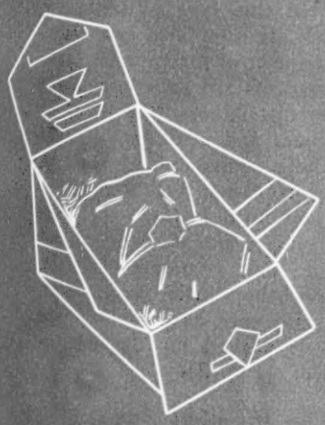
Labels applied too high or too low down on types of bottles where the barrel tapers into the breast or base face this difficulty. The squat rounded side, club-soda standard, or shapes

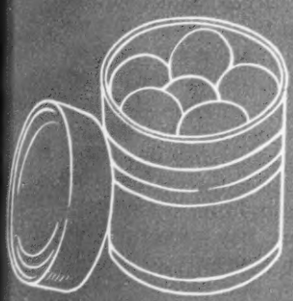
(*Turn to page 174*)

PACKAGES *for* FROZEN FOODS









Rapid, low temperature food freezing is an infant industry. It has had vigorous growth. It has faced many problems — some of them remain unsolved. Progress has been made in processing technology, but many distribution difficulties remain to retard expansion. The industry has met and overcome many and varied package difficulties, especially since frozen foods have been packaged for the consumer. On the following pages is a review of the development of frozen food packages, which discusses the packages and packaging materials used by the industry.

Packages and Packaging Materials Used By the Frozen Foods Industry

To obtain the material for this review, questionnaires were sent to several hundred manufacturers of frozen foods. The questionnaires returned by these manufacturers furnished data on approximately 60 per cent of the total frozen food production. The several hundred frozen food manufacturers receiving the questionnaire were requested to indicate the makers of each of the package materials used by them, and to designate the use and function of each material. A questionnaire was then mailed to the package material manufacturers. The review which follows is based on the data from all these questionnaires and from interviews.

The endeavor was to reach all frozen food manufacturers and include all packages and packaging materials used by the industry. If any packages or package materials have been omitted, it is because of inability to learn of them.

The package first became important for frozen foods with the advent of cold packing. True, some ice cream manufacturers observed the practice of buying strawberries when the market was flush and freezing them in the original crate just as purchased, for use as flavoring after the berry season was past.

Barrels

Probably the first container selected for the storage and shipment of frozen foods was the paraffin lined tight wooden barrel. Capped and washed berries were filled into them, usually with the head removed, sugar was added, heads replaced. The sealed barrels were then placed in a low temperature holding room, and rolled frequently until the berries were frozen throughout. The tight wooden barrel is still used by many food manufacturers engaged in cold packing berries and fruit juices. Meat, cut into pieces, is also frozen in the barrel. (Fig. 1).

Bulk Tin Containers

Possibly the demand for smaller containers brought about the adoption of the 5, 10, 30 and 50 lb. slip-cover tins and 5, 12 and 22 lb. pails, as containers for cold packed berries. These types have continued in favor and are at present used by many food manufacturers as either a permanent or temporary container for frozen fruits, vegetables, cream and eggs. These containers are used for storing "cold pack," "sharp frozen," and "quick frozen" foods.

The 10, 30 and 50 lb. cans have three major uses. They are used for the storage of foods not frozen in the package. In this type of container, frozen foods are often held until packaged in consumer or institutional packages. Shipments are sometimes made in them to distributors who do their own consumer and institutional packaging. These containers are used as a shipping container between manufacturer and manufacturer—between the food freezers and the soup manufacturer or fruit preserver—between freezers and bakery or ice cream plant. They are also used as containers for frozen foods packed for the institutional trade. (Fig. 2).

The Wooden Box

The wooden box is another of the packages used during the development period of frozen foods. When fish was first prepared for the market, in frozen form, the wooden box was the package employed by some freezers. Often no liner or other package material was used. According to data in some of the returned questionnaires, frozen fish is still packaged in 15-lb. wooden boxes with or without the addition of any other package material. The chief virtue of the wooden box is its lower

initial cost and its sturdiness in shipment and storage.

Prefabricated Fiber Containers

Fairly early in the history of food freezing, packers turned to the prefabricated wax paper container for liquid, semi-liquid and moist food products, such as berries and fruits in sugar, vegetables in brines, oysters and scallops. There are several types of these prefabricated wax paper containers in use today. Some are tapered cylindrical shaped, some cup-shaped. The consumer sizes most mentioned in the questionnaires were 1 lb. and 1 pt., 1 qt. and 12 oz. The preferred sizes for the institutional trade were 3 and 5 lb., ½ and 1 gal. (Fig. 3).

These prefabricated containers are generally made of solid sulphite or sulphite backed Manila paper, wax-coated after fabrication, by either the cold water process or by the hot baked method. This type of container, according to the comments on the questionnaires of those manufacturers who indicate they now use them, has the advantage of rigidity of shape. Containers of this type are supplied in nests, are easily filled, and are watertight. In the frozen food industry this type of container is almost always hand filled and hand capped. Even though machinery is available for performing these operations, machinery has not as yet been generally adopted.

Another type of prefabricated container is the spiral wound cylindrical container with slip-over lid. This type has been both adopted and adapted from the dairy industry, where it is used for ice cream and cottage cheese. Just as it is used in the dairy industry, it has been adopted by some of the frozen food manufacturers. It has in some cases been further adapted for

frozen foods by means of a coated, transparent cellulose liner, heat-sealed to the rim. When this container is filled, a cover of coated transparent cellulose is heat-sealed over the top. This forms an inner bag of coated transparent cellulose which, according to the comments of users, "protects the contents from moisture vapor breathing." The slip-cover lid, which adds further rigidity to the container, can be removed to permit inspection of the contents without admitting air and moisture. (Figs. 4 and 5).

Folding Boxes

Folding boxes are extensively used as containers for frozen food, both for foods packed for the institution and for the consumer. The trade has not standardized on folding boxes. Therefore, at the present time, there are many sizes and shapes and designs of this type of package. (Fig. 6).

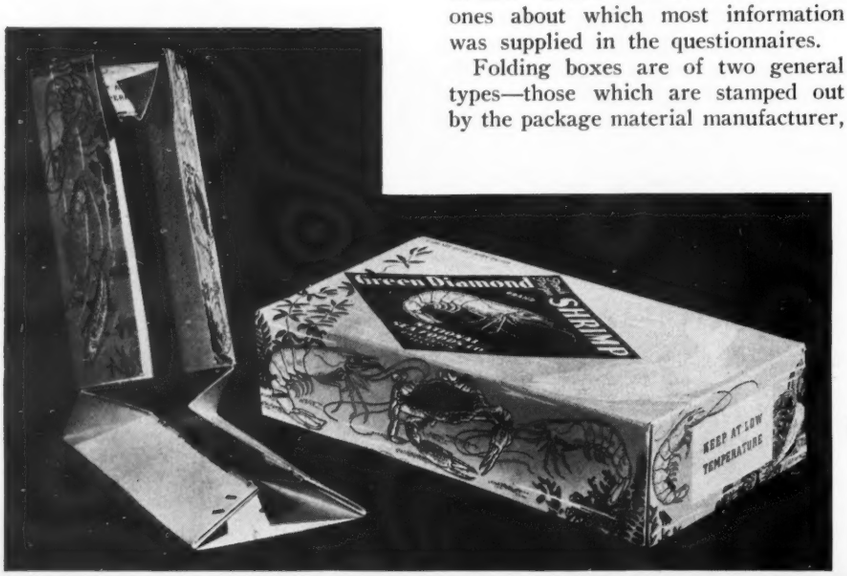
These boxes are shipped to the manufacturer, folded flat, to be formed at the freezing plant. (Fig. 7). Manufacturers who use them agree generally on the freight and storage economy obtained through the use of this type of container for frozen foods. Frozen food manufacturers stated on their returned questionnaires that the folding box not only has the advantage of shipping and storage economy, before filling at the freezing plant, but that it also has the advantage of shape. The folding box permits more pounds of frozen foods to be shipped in the same sized shipping container than any other type container. They also report that this type container requires less storage space per pound of frozen food—a consideration when the storage space is refrigerated. These manufacturers further contend that the same advantages apply during the period of storage in the institution's and retailer's holding cabinets.

In the field of folding boxes there are innumerable patterns, designs and varieties. Many of these have been and are employed in packaging frozen foods. There is not space to discuss more than a few of the folding boxes in use. Those discussed here are the ones about which most information was supplied in the questionnaires.

Folding boxes are of two general types—those which are stamped out by the package material manufacturer, but are entirely formed at the freezing plant, and those which are not only stamped out, but partially formed by the material manufacturer.

The folding boxes stamped out by the material manufacturer, but formed at the freezing plant, are available either with lids attached—the complete container stamped out in one piece—or with container and lids stamped out separately. In either case the boxes are shipped knocked down. Each type has a special application in the industry.

The style of package known as one-piece simplex and similar boxes are used for packing vegetables which are not free-flowing such as spinach, corn on the cob, broccoli and asparagus. The container in which this type of vegetable is packaged must have a large opening for filling. The largest surface of the one-piece sim-



plex folding box serves as lid—therefore this type of folding box is convenient for packaging foods which are frozen in large pieces. (Figs. 8 and 13).

Another style of folding box is the two-piece simplex and similar boxes. This style of folding carton box, one of the first used for packaging frozen foods, is still used by many small packers for their full line and by the large packers for such items as fish and meat. (Figs. 9 and 17).

It is this style of folding carton which has favor with producers who are packing under various private brands. The procedure in this case is to package during the packing season in the bottom tray and to wrap these trays with moisture-vapor-proof material such as coated transparent cellulose. The products so packaged are then stored until such a time as they are prepared for shipment to distributors under the distributor's own private brand. The lid or cover is then formed after it is printed with the label of the distributor.

This type of package can be used for display purposes in the retail store. Removing the cover permits inspection of the product without breaking the seal or removing the product from the sealed tray and without exposing it to air and moisture vapor. (Fig. 36).

These two types of folding boxes are shipped entirely knocked down. The one-piece end opening web end snap lock or tucked folding box is partially fabricated by the material manufacturer. This folding box is end opened, end closed and end filled. Though it is received by the food freezer knocked down, it is in fact a four or six sided glued tube which may be formed into a rectangle open at both ends. This style of folding box is in common use for packing free-flowing vegetables or fruits which lend themselves to filling through the small end opening. (Figs. 10, 14 and 15). In packing this style of box, it is customary to use a liner. This will be discussed later. Some of the frozen food manufacturers reporting consider this type one of the most economical folding boxes for frozen foods. Frozen foods are packaged in this type box in quantities from twelve oz. to ten pounds.

There is another type of folding box in use which combines the characteristic features of both the foregoing types; in this type of folding box the tray or bottom portion of the two-piece simplex is formed and inserted in a glued tube after it has been filled and wrapped in transparent coated cellulose. The glued tube has a cut-out window in one panel. This cut-out permits inspection of the product within through the transparent wrap around the tray. To avoid the danger of injuring the transparent wrap during storage the tube is placed over

the tray so that the cut out portion covers the tray bottom with the solid portion protecting the transparent wrap.

This type of container is useful for packaging small quantities of frozen foods, particularly for retailers with limited requirements. Six of these simplex tray and glued tube containers are packaged in a chip carrier to form a wholesale unit for the smaller retail outlets. (Fig. 11).

The primary function of the folding box is to provide rigidity and place limitations on the space occupied by the frozen foods in a single package. Where there is need to protect the frozen product from dehydration and oxidation, the folding box alone has not proved sufficient.

At present, the folding box is rarely used except in combination with other package materials—liners, outer wraps or both. However, there are conditions under which the folding box alone is sufficient. Whole shrimp, glazed after freezing, are packaged for the institutional trade in a heavy folding fiberboard box, without liner or without wrap. This is a one-piece box, waxed and fabricated with metal staples. (Fig 12.) Glazed shrimp in the shell withstand dehydration and oxidation and, therefore, do not require the precautions necessary with other frozen foods.

Some folding boxes depend on the contents to keep them open—the folds collapse except when the container is filled. Other folding boxes maintain their shape by means of a locking device which holds them rigid in rectangular form. Both the one-piece and the two-piece simplex as well as similar designs may be obtained as lock-boxes, rigid when erected or in the diagonal fold form which collapses except when filled. (Fig. 8.)

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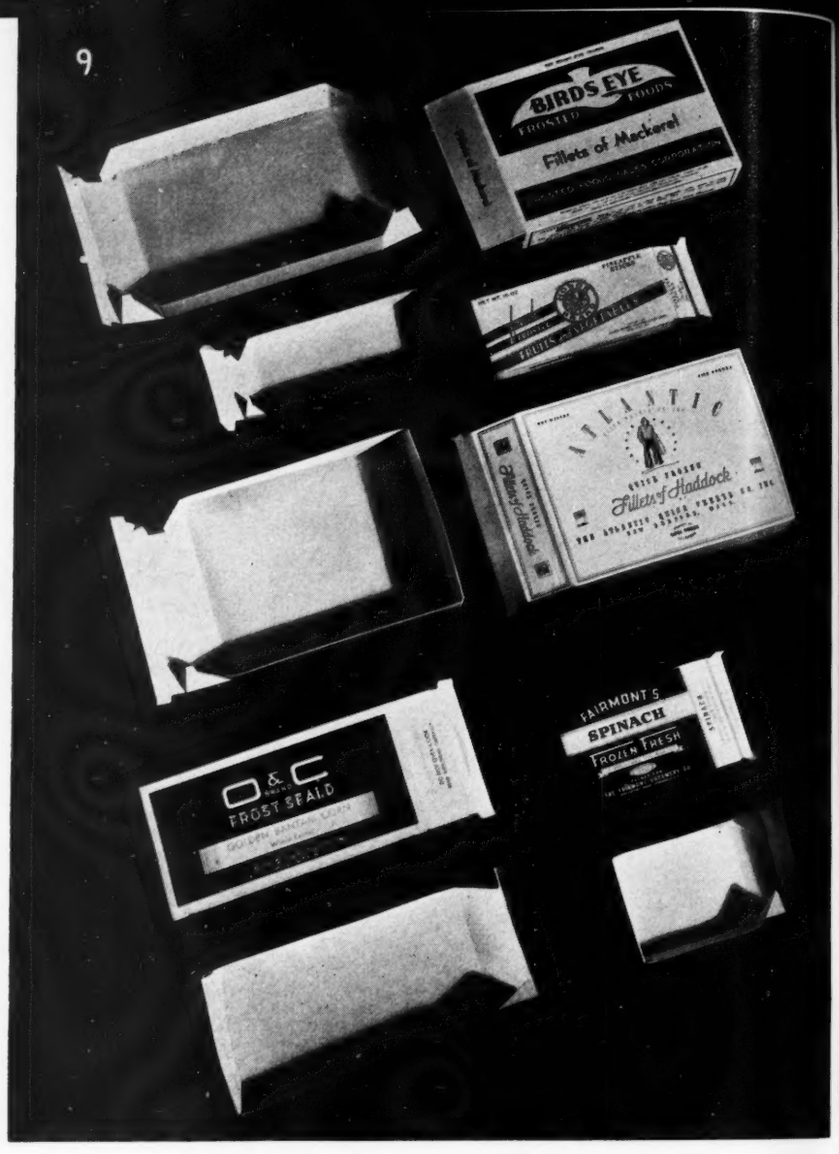

Dimensions of the folding box for institutional and consumer use, are determined by several influencing factors. If the foods are to be frozen in the package, the depth of the container is limited, thereby determining the other dimensions of the box. The dimensions for the same contents are not the same for the same item frozen before and after packaging. The weight of content may be the governing factor in determining dimensions or the size and shape or the character of the foods themselves may influence the shape and determine the dimensions for the folding box. A box satisfactory in dimensions for a single fish fillet may not be the most economical size and shape for asparagus, peas, beans or berries.

The folding box, though water-tight, is not moisture vapor proof. Many frozen foods packaged in the folding box are protected from dehydration and oxidation by the use of additional packaging material. This additional protection may be in the form of a liner, or outer wrap or both.

Some food freezers contend that the liner or inner wrap is more essential than the outer wrap because there is more probability of damage to the outer wrap during the journey between the food freezer and the consumer, than to the liner. If the outer wrap is broken, oxidation as well as dehydration may follow. The liner is less exposed to rough handling than the outer wrap because it is protected by the rigid sides of the box. By some food freezers, the inner liner is considered most important regardless of whether the outer wrap becomes

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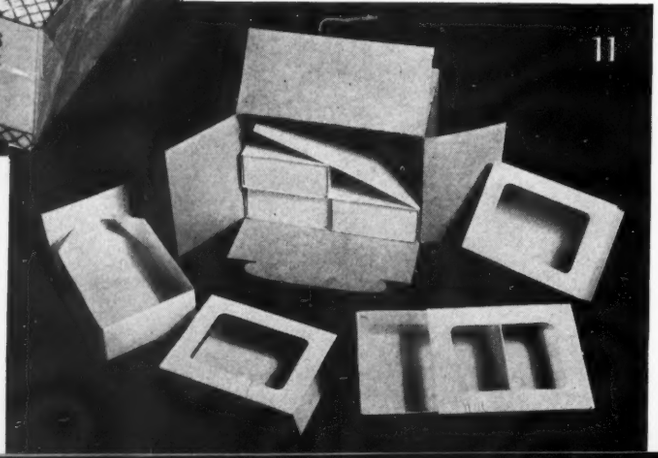
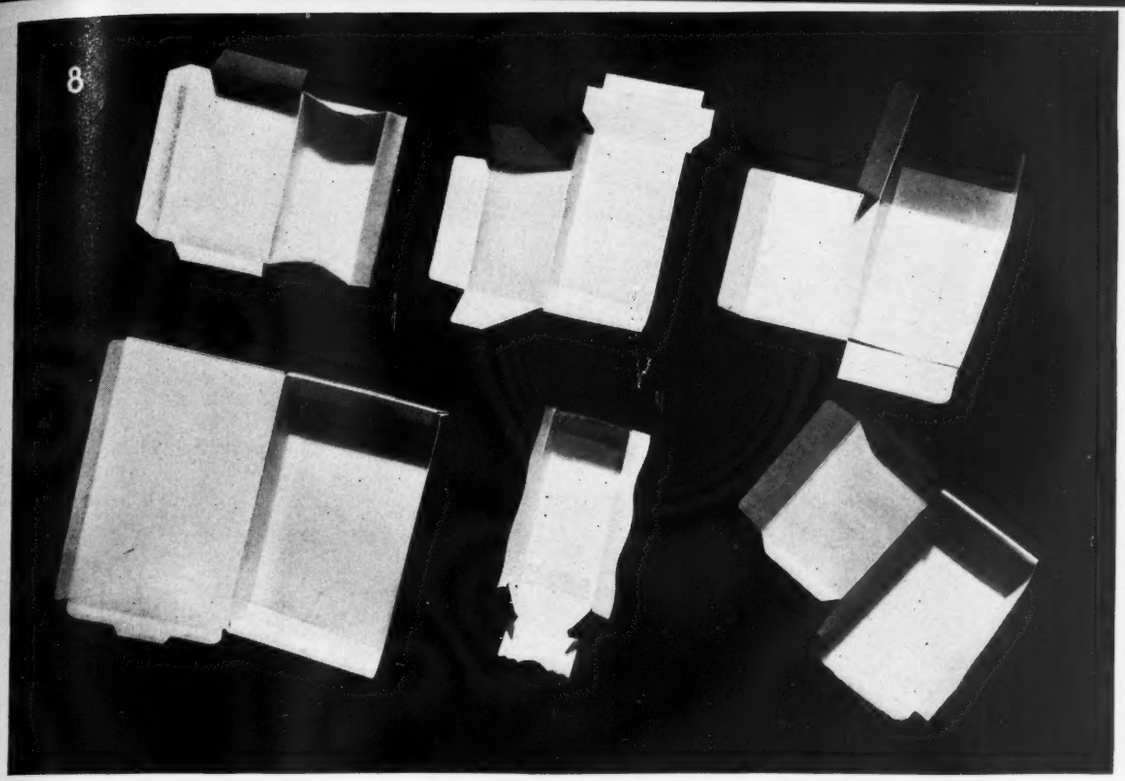




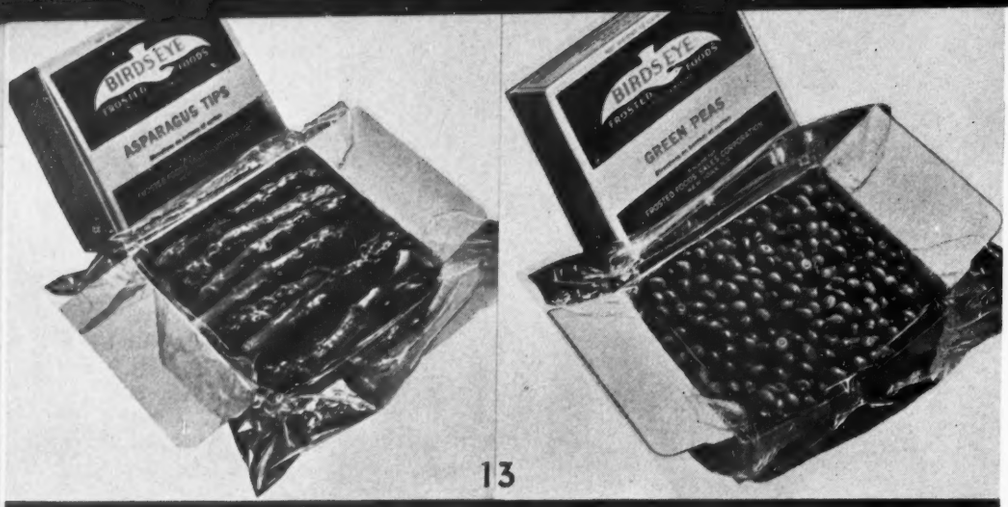
damaged or not because the inner wrap or liner seals the product against the flow of moisture vapor through the cut edges of the carton. This flow takes place even though the surfaces of the folding box are waxed and in themselves moisture vapor proof. Some frozen foods pick up a slight flavor from this moisture vapor flow through the carton edges unless surrounded by a tight wrap which in itself imparts no odor or flavor.

This flow of moisture vapor is the result of changing relative humidity. Throughout the storage period the relative humidity in the package and outside varies. Generally the relative humidity in the package is higher than outside the package with the resultant flow of moisture in the form of moisture vapor from the frozen foods, unless prevented.

Filleted fish is often packaged in this manner, wrapped in a heat sealed liner in a folding box. Fillets are prepared in 1-lb. packages, wrapped in either coated parchment or coated transparent cellulose, and heat sealed to form a moisture-vapor-proof package. (Fig. 18). These wrapped fillets are placed in folding boxes that contain 5 or 10 lb. (usually a two-piece simplex or similar folding box) and are then frozen. In many cases, frozen fish fillets reach both consumer and institutional market in this type package. (Fig. 17).

Regardless of the importance placed on the liner, most frozen foods, packed in folding boxes destined for the consumer, are further packaged by an outside wrap around the carton. Possibly somewhat less stress is placed on the outside wrap for the institutional package.

The majority of frozen foods packaged in folding boxes are protected by the carton, inside liner and outside



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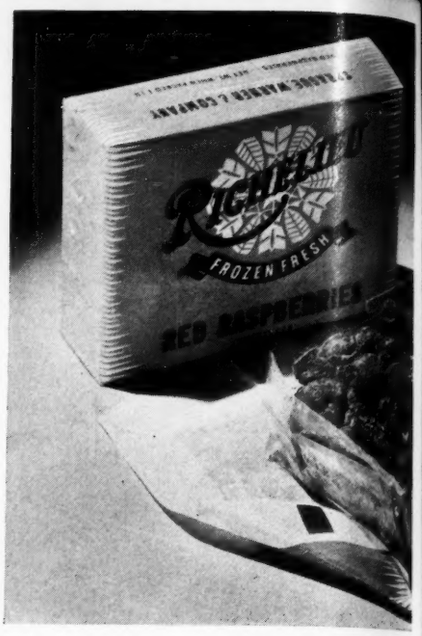

cold wax process, stiffens the container and makes it water repellant.

Liners

Liners serve an important function in the frozen food industry. Liners are the odorless, tasteless substances which separate the frozen foods from contact with the container. A liner in some form, is a part of almost every frozen food packaged.

Some liners form the inside of the container itself. Paraffin forms the lining for most of the wooden barrels used for cold-packing fruit juices and berries. Paraffin also forms the lining for nested cups and some cartons for frozen foods are stamped out and wax coated or stamped from wax-coated paper. Waxing, usually with paraffin, by either hot baked or

wrap. This is especially true of frozen fruits and vegetables packaged for the consumer.

In packaging frozen fish fillets, often either the liner or outside wrap is omitted. Many fish freezers seal fish fillets in coated, printed parchment, or coated, printed transparent cellulose before packing in the folding carton, around which they use no wrap. (Fig. 17). Recently, in the case of Atlantic Coast Fisheries' Nordic 1-lb. fillets, the liner is omitted in favor of the outside wrap of transparent cellulose. (Fig. 35).

Food freezers, in their questionnaires, reported the use of folding cartons of several different stocks. Consumer size folding boxes are usually of waxed butter board, white patent coated solid manila or solid sulphite—single or double bleached. Weights of stock vary from .015 to .020. All stock is made from virgin pulp. Folding boxes for the institutional trade are usually of waxed butter board, white patent coated solid manila or solid sulphite in weight of stock from .018 to .030. Solid Kraft is used in weight of approximately .030 and Kraft lined chip board in weights from .028 to .040. Folding

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paper cylindrical containers. Here it gives rigidity to the container and makes it water-tight as well as lines the inner surface, thereby separating the frozen foods from contact with the paper of the container. Cylindrical containers are also lined with transparent cellulose. (Fig. 5).

Cream, eggs, fruit and vegetables, when packed in 5, 10, 30 and 50 lb. tins, are usually protected from contact with the metal by a liner of enamel.

When the wooden box is employed for shipping frozen fish, the fish is usually protected from contact with the box by some type of liner. Sometimes it is a glaze on the fish itself or on seafood which protects the product from contact with the box. More often a waxed or greaseproof paper lines the box, even though each fish or fillet may be glazed or separately wrapped.

The advantage of trade branding quality poultry has encouraged many poultry freezers to wrap each fowl to be frozen in a separate package bearing the packer's label. (Figs. 27 and 28). Even though each frozen chicken or duck is encased in a tightly sealed package, the shipping container, usually containing six dressed fowl, is lined. Printed as well as plain waxed paper is used as a poultry shipping container liner. (Figs. 24 and 26).

The liner is often very important when frozen foods are packaged in folding cartons, for the consumer and institutional trade. Folding carton liners are of two general types. Some are folded into the carton as a sheet, at the time of filling the carton, and folded over the contents when filled. Whatever fabricating operations are performed on liners of this type are accomplished at the time of filling.

Some liners are partly shaped as bags or tubes before arriving at the freezing plant or are formed as such by bag making machinery at the freezing plant. Liners of the simplex and similar type folding box, both the one piece and two piece, are either sheets or bags. (Fig. 13). If bags, these are filled with foods to be frozen or foods

already frozen and then fitted into the folding carton.

Users of the bag liner claim advantages for this type liner besides ease of filling and moisture vapor proof tightness. The maximum amount of air is exhausted from the bag before sealing, leaving little air in the bag to oxidize the frozen products and also leaving ample room for expansion.

Liners for the partially fabricated carton which opens into an oblong

tube to make an end-filled carton, may be either folding bag or folding tube. Often the liner for this type of folding carton is formed with and inside the carton, the tube or bag attached then conforming to the inside of the box, and opening with the carton. If the liner is a tube, one end must be sealed to form a bag at the freezing plant before forming the bottom of the box and filling. (Figs. 14 and 15).

Most liners for folding cartons are hand-filled especially when the simplex or similar carton is used. Machine filling is sometimes employed to fill bags and the end opening type of carton in which the liner is sealed in place.

Liners for the simplex and similar type of folding carton are generally of coated parchment, usually printed, or of transparent cellulose. Liners for the end-filled and opened folding cartons are of dry waxed sulphite, paper, vegetable parchment, coated and uncoated, and transparent cellulose. All are heat sealable.

Liners for the shipping containers are employed for a somewhat different purpose than liners for other containers. They are included to furnish insulation in addition to that of the shipping container and to strengthen the container. These liners are usually of single or double wall corrugated board. (Fig. 16).

Outside Carton Wrap

Outside carton wraps have several functions. They serve to seal the carton and thus protect the contents from dust and other foreign matter. They also soil less easily and present a cleaner appearance than the carton. When the outside wrap is made of moisture-vapor-proof material, tightly sealed, it protects the frozen product from dehydration and oxidation. (Fig. 19). The outside wrapper is also used to identify a frozen food packaged in an unlabeled carton, with the brand name of the private label manufacturer or distributor. Generally, the outside wrap has greater display value than the carton. However, this benefit of the outside wrap has received less attention, until recently, than other benefits. The primary use of the wrap has been protection.

The outside wrap finds its principal application in packaging frozen fruits and vegetables, particularly on the consumer package. (Figs. 20, 21 and 22). Until recently the liner inside the carton was considered by many packers as of greater importance than the outside wrap. The outside wrap was used as an addition to the inside liner. Recently, however, several packagers have changed package designs, eliminating the liner in favor of the outside wrap. This year Atlantic Coast Fisheries Co. uses the outside wrap for a window as well as a wrap for a one-piece folding top tray which, when set up, leaves an opening on top of the carton through which the frozen product may be inspected. (Fig. 35).

Outside wraps are, in theory at least, air-tight and moisture-vapor-proof—unaffected by variable relative humidity and long storage at low temperatures. Wax paper and transparent cellulose are the most used outer wrap materials. The transparent cellulose is usually coated, especially when used on cartons which employ no liner.

Other Wraps

One of the first consumer package developments in the frozen food industry was the packaging of the individual fish fillet, wrapped mostly at that time in printed, coated parchment—the packaged fish fillet representing one of the earliest attempts to incorporate eye appeal in the package. The fish fillet is packaged in several methods today. The fillet is packaged as a unit consumer 1-lb. package in either a one-piece or two-piece simplex or similar type folding carton. (Figs. 17, 35 and 36). It is also packaged as a 1-lb. consumer unit package in coated, printed, transparent cellulose, or coated printed parchment, the consumer's units packaged in 5 and 10-lb. folding boxes. (Figs.

17 and 18). Ground meat, chops and steaks, are also frequently packaged in a similar manner.

Ground meat is often packaged in a 12 oz. to 1 lb. simplex folding box wrapped in a liner, while chops and steaks are generally separately wrapped, sold by weight and often displayed separately even though separately wrapped steaks and chops are packaged six or more to the large folding carton. (Fig. 29).

Large pieces of meat, leg of lamb and roasts, are separately packaged, usually in moisture-vapor-proof cellulose. (Fig. 30). Both meat in large pieces and poultry are packaged by this method and both are sometimes further packaged in a stockinet. The purpose of the stockinet is to hold the wrapping material firmly in place on the frozen product and protect it from damage in shipping and handling. (Fig 31).

Corn on the cob is one vegetable which is not always packaged in a folding carton or any other container in general use. Some packers wrap corn on the cob in heat-sealed printed transparent cellulose bags or in parchment. (Fig. 32). Corn on the cob, because of the variation in the size of the ears, is difficult to package in containers easily adaptable to other vegetables and fruits. This is not the only advantage of the separate package for corn on the cob according to those who commented. Corn on the cob in transparent cellulose bags has decided eye appeal.

Eye appeal and general merchandising value are two elements responsible for the packaging of poultry in printed, transparent cellulose wraps. Another element is the fact that the packaged fowl can be identified by the packers' brands. (Figs. 24, 25, 26, 27 and 28).

The Tin Can

The application of the tin can to frozen foods has been confined largely to the industrial and institutional package. The enamel-lined slip-cover can, similar to that used for lard, has long been used for packaging cold packed fruits, fruit juices and berries, but the smaller sealed can is a new-comer as a package for frozen foods.

Orange juice and lemon juice have been vacuum cold packed in 6-lb. 6 oz. cans and in 2 lb. cans by California Consumers Corporation. The appearance of these containers differs from that of the usual can of grocery products. The manufacturer's lithographed label is on the end of the cans, instead of on the side, and the sides are plain tin. (Fig. 33).

Though a new process for freezing fruits, vegetables and sea foods in cans of the usual trade sizes has passed through the experimental stages (Food Industries, January 1939, p. 10), the can does not as yet play a major role as a container for frozen foods.

Tin-and-Fiber Cans

This year the fiber can with top and bottom of tin made its appearance as a frozen food package for the institutional trade. In the 5-lb. size, it is used for packaging free-running vegetables, packaged after freezing. This container is made of fiberboard coated on the inside and formed in the shape of an oblong with rounded edges. The top and bottom are tin. The oval shaped opening in the tin top is closed with a compression lid. (Fig. 34).

This type of container requires no liner or outside wrap. The fiberboard is wax-coated, so that the inside of the container is moisture vapor proof. The outside of the fiberboard is also made impervious to air and moisture by a special application of varnish. Those who use this type of container

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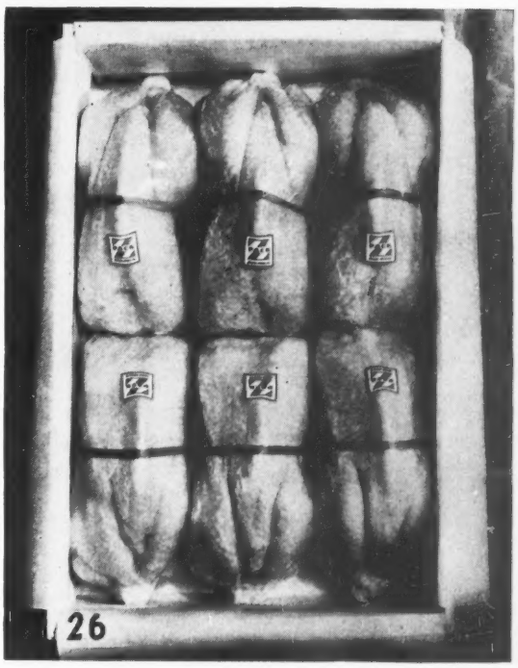
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state that it preserves the quality of the product packed in it. They also state that the package requires no separate liner or outside wrap and therefore conserves packing time and labor. They also state that the varnished outside surface adds to the eye appeal of the container.

Use of Color

Most frozen food packages in the past have probably used the merchandising value of color less than other major divisions of the food industries that sell to the consumer. Most frozen food packages have been printed in one color on white background. The color background has been little used.

Several of this year's frozen food packages, however, indicate a trend toward a greater use of color. Both the 5-lb. tin-and-fiber containers of Bozeman Canning Co. and Sprague-Warner show this trend. The consumer packages of Sprague-Warner also mark this trend as does the 1 lb. consumer fish fillet package of Atlantic Coast Fisheries. (Figs. 34 and 35).

Recipes and Informative Labels

The informative label and the label with full cooking instructions and recipes is of recent development throughout the food industry. Labeling of this type has been more generally adopted by the frozen food industry, probably, than in most of the other branches of the food industries. And furthermore, some of the frozen food packages furnish more recipes and comprehensive information on methods of cooking than is usual in other food industries. (Figs. 35 and 36).

The inserting of a folder or booklet in the package, a practice followed in many branches of the food industries, has recently been adopted by at least one of the frozen food manufacturers. Sprague-Warner uses full color photography inserts containing a variety of recipes and menus with each package of frozen foods. (Fig. 37).

Package Accessories

Most glues, which have been successful in packaging the normal run of

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grocery products, have not proved satisfactory for sealing frozen foods. The low temperatures and the variations in relative humidity that occur in frozen food storage have necessitated the development of new sealing methods and new adhesives. Many package materials, in addition to being paraffin-coated are coated with special adhesives which form a tight moisture-vapor-proof bond when heat-sealed.

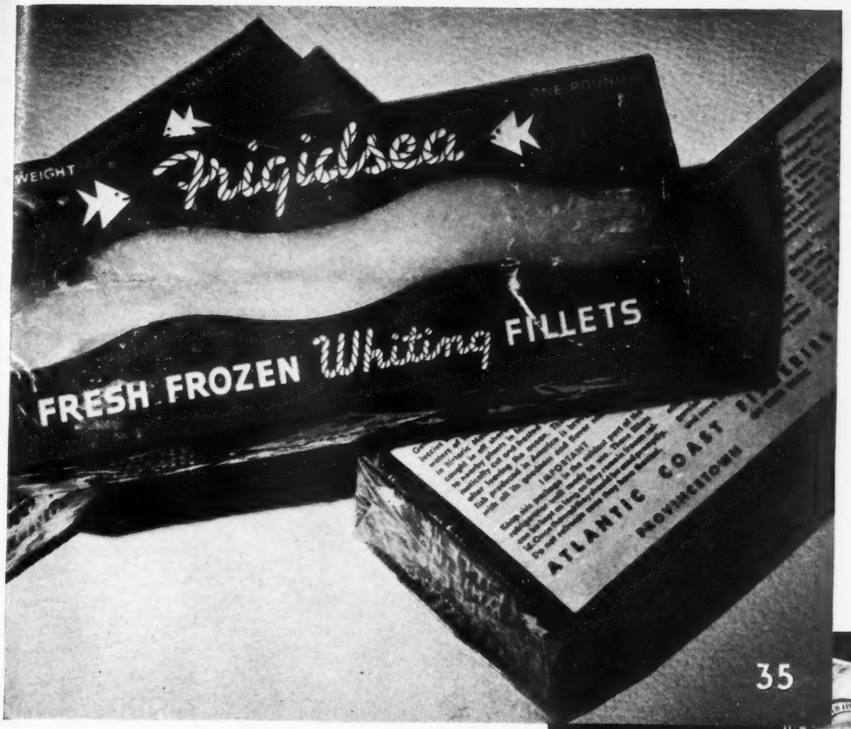
The difficulty arising from the deterioration of glues and other adhesives has caused many food freezers to turn to metal stitched or stapled shipping containers and also to containers closed and secured by wrapping with twine.

The Shipping Container

There is as little standardization in the size, shape and other variables of the shipping container as there is in many of the other packages used for frozen foods.

The wooden box in various sizes and shapes is in use as a shipping container for frozen fish as well as the corrugated and solid fiber box. (Fig. 39).

Poultry is shipped in a variety of containers. The wooden container used by some packers is the wire-



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bound, cleated, veneer type; other packers use heavy sawn wood type boxes. (Figs. 25 and 26). The corrugated paperboard boxes are usually 200 lb. to 270 lb. test, *A* and *B* flute corrugated, usually paraffined on the inside. Some packers use single-wall corrugated boxes—some double—with or without liners. The insulating value of the container is greatly increased by the additional corrugated layers and so also is the strength of the container.

Safeguarding the strength of the container is more important in the frozen food industry than in other food industries, because the carton must stand up under long periods of storage at low temperatures and under various degrees of relative humidity. The solid fiber boxes used for frozen poultry are usually .080 solid fiber.

The shipping containers for poultry most frequently used by frozen food packers hold six or twelve ducks or chickens, or one turkey. (Fig. 28). Often in the case of the turkey container, six are shipped further packaged in a light wooden crate.

According to the questionnaires returned by food freezers who package fruits and vegetables, the corrugated paperboard shipping container is largely used for products packaged in folding boxes. In some sections of the country, however, the solid fiber container is an important type of shipping container for fruits and vegetables. Those manufacturers reporting on solid fiber containers for frozen fruits and vegetables use containers of regular slotted .140 solid fiber.

No two frozen food packers reported using shipping boxes with the same dimensions and the shipping weight varied, as reported in the questionnaires, from 12 lb. to 60 lb.

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Since the self-service store came into prominence, packers of grocery store products have been giving more attention to the appearance of the shipping container, which often forms a part of the displays in this type of store. Frozen food packers are also dressing up the shipping container. Even the design of some of them gives weight to the value of shape and appearance for displays. (Fig. 38).

Packaging by Machinery

Included in the questionnaire to frozen food packers were spaces for the packers to indicate the packaging operations performed by hand and by machine. Data from the questionnaire indicate that the industry's packaging is done mostly by hand.

A portion of the packages for free flowing vegetables are machine filled. Bag liners and outside wraps are heat sealed by machine whether hand or mechanically operated. Outside carton wrapping is put on by both hand and machine. However, more packers use hand operations than machine operations. Although some shipping cartons are machine stitched in the packer's plant and closed by machine stitching or are machine wrapped with twine, most operations on the shipped carton are hand operations.

The table which follows is compiled from the packers' answers on the questionnaires. The table summarizes each packer's interpretation of his own operations as either hand operations, machine operations or both.

Frozen Food Packaging Operations Performed by Machines and by Hand

Operation	On the consumer package	On the institutional package
Filling by hand.....	67%	68%
Filling by machine....	15%	20%
Both methods used....	18%	12%
Closing by hand.....	78%	83%
Closing by machine....	18%	13%
Both methods used.....	4%	4%
Products frozen before packaging....	20%	29%
Products frozen after packaging.....	65%	50%
Both methods used....	15%	21%

EXPERIENCE IS A DEAR TEACHER—in fact, a very expensive teacher.

By experience we learn about mistakes as well as successes. In most of our reading, however, we learn only about successes—seldom about the failures. Yet knowledge of failures is just as valuable—sometimes more valuable—than knowledge of successes, for it tells us what to avoid and why. There is no reason to repeat the failures of others if we can learn about them and profit thereby.

As a rule, only the successful things of life are published. We hear only about the man who made millions in stock speculation, or who led his company to great success. Seldom do we learn of the failures. This applies even to packaging. It is commonplace to hear all about a packaging success (except, possibly, the real reason why it was a success). But we almost never hear about a failure, or why it was a failure.

During the past month, several important men in the food industry have pleaded for publication of failures so that others might be warned away from needlessly repeating the waste that goes with failure. Such pleas are nothing new, but it is rare to find them bunched up as has recently occurred. From these pleas has come the plan which finds expression here—a symposium of mistakes to be avoided in packaging.

Originally the plan was to publish 99 mistakes to be avoided. The call went out to all manner of sources for actual examples of such errors. Each case was to be an authentic case history that actually had happened. The response was tremendous. Instead of 99 instances it will be more than 299—perhaps 399, for they are still coming in. And there are very few duplications of experience. Perhaps you will want to contribute your own bit to the pot.

The information that has thus been provided is of such value that the series, planned only for the March issue, will be continued during the ensuing months until it is completed. You won't want to miss any of them. After the series is complete the plan is to republish them in pamphlet form for, in reality, it will constitute a text book on many aspects of packaging.

In order to get at the case studies presented here it has been necessary to guarantee to everyone who has submitted their own experiences that no names will be mentioned, no brand names identified. No further information will be given out, other than the facts regarding a packaging mistake and the reasons why.

After you have finished the entire series, you will probably realize that one very important principle emerges from this remarkable lot of experiences. The failure underlying most packaging failures is that of failing to consult all of the interested parties. For unlike many of the common mistakes of life where only two persons are involved such as: failed to read before signing; hick meets city slicker; or boy meets gal,—these industrial mistakes involve a considerable number of cooperating parties. All too often seven parties will concur in a decision that would never have been made had the eighth (and only missing) interested party been called in. To illustrate: if designer, sales manager, advertising manager, advertising agency, paper maker, carton maker, filling machine maker, carton-closing machine maker and production superintendent all agree on a new package that later failed because they all forgot to consult the adhesive maker, then you have the typical sort of case where one important element was omitted in making the final decision.

As a final remark, it should be definitely stated that these mistakes to be avoided are not published in any spirit of gossip. The only motive is to be helpful. And please do not ask us to reveal the identity of those who have shared their troubles. The editors have an obligation to fulfil in preserving the anonymity of the contributors.

If you have had any similar experiences to add to this collection, please send them along.

PACKAGE DESIGN AND CONSTRUCTION

1 **Failure to Let Consumer Decide**—Faculty packages or labels may result from omission of consumer tests. The trade name, color and design of label on a package should fit the contents. The "fit" should be determined by the consumer, through consumer tests, not by some one who thinks he knows more than the consumer.

2 **Simulating Competitor's Design**—Designs similar to competitors' are sometimes developed, either consciously or unconsciously, especially when the competitor has an excellent label or package that has obvious merit. New designs should not be released before making comparisons from this viewpoint to avoid adverse influence on sales or even a law suit.

3 **Avoid Optical Disadvantages**—Any new label or package should not be adopted for factory production until it has been compared with all the packages of all competing products on the grocery display shelf. Sometimes a new label or package looks well enough when viewed alone, but in competition it sometimes possesses an optical illusion that makes it appear smaller or otherwise at a disadvantage. On the other hand, optical illusions that are advantageous should be retained or improved.

4 **Layouts Should Be Studied**—In changing the size of the label, or of any identifying mark on the label, it is not sufficient to give orders to the lithographer to change the size to one-half, three-quarters, or whatever size is desired.

On the contrary, a correct layout of that size should be studied, for a change of size frequently necessitates a change in proportion to attain the proper appearance.

5 **Failed to Consult Production Dept.**—A moderate size advertising agency, seeking additional revenues during a period of slow business, prevailed upon one of its clients to permit redesign of several packages in its line. This was carried out by the agency in conjunction with the sales manager and advertising manager.

The new packages did not prove successful, however, because the actual cost of production was much higher than had been figured on. Naturally, if the production department and material suppliers had been consulted this error could have been avoided.

P. S.—The agency lost the account.

6 **Test, Test, Test All New Labels**—Choose trade names that avoid infringing the names of others. A check on this item may avoid junking a large order of printed labels, (and needless unpleasantries).

Exhaustive factory tests should also be made before releasing a new package. For package materials in the production line do not always perform as expected or calculated. Nor do the production difficulties always show up in preliminary investigations.

7 **Small Opening Made High Costs**—When choosing a container for powdered materials, it is necessary to be sure that the opening is large enough for efficient filling. If the opening is small, it is necessary to use a very small filling auger. The result is that filling operations are very slow. If the filling machine manufacturer is consulted before the containers are bought, he will recommend the proper size of opening for efficient, rapid filling, thus saving much in packaging cost.

8 **Overdressing: An Error**—It is an error of good judgment, if not a serious mistake, to overdress a package. Transparent film wrappings, colored ribbons, and very peculiarly shaped containers belong only to the seasonal package, which may be for Christmas or some other holiday of the year. At least, this principle is true for anything but the luxuries. An attractive but not gaudy package, with short and concise wording on the label, helps sell the product and keeps it in the consumer's mind for the next purchase.

9 **Failed to Test New Container**—A company introduced a new sized can of powdered milk for the bakery trade. It did not bring repeat orders. Investigation showed that the trouble lay in the fact that the hole in the top of the can was not wide enough for the usual baker's scoop to pass through.

10 **How to Select an "Abortion"**—At one time we were desirous of changing the wrapper on a piece of bar goods. Probably twenty or twenty-five sketches were made up by the artists of wrapper manufacturers. These were submitted to a committee of eight or ten executives who were asked to make their individual first, second and

third choices, respectively. The wrapper designs which received the greatest number of votes, as first choice, were then set aside, and the group proceeded to make further selections from them.

The final result was an abortion which nobody liked and was very ineffective; whereas some of the sketches, which were given second choice, were better. And, had they been included with the first group for a second vote, they would probably have received more favor than the one which was eventually selected.

From this we learned not to follow the voting method as described.

11 **Failure to Consider Function**—Many food packagers seek low cost packaging materials without thorough regard for their functional property. Higher cost materials often can better the condition of the product for consumer use, add greatly to shelf life, and lend themselves to less costly packaging operations. The net result may be a cheaper unit package, better consumer reception, lower cost of doing business because of reduction of stale returns. Thus, when a packer is buying materials by the pound at $0.06, he should not turn down a $0.25 material until he has thoroughly investigated its functional properties as adapted to his product.

CARTONS

12 **Hard Foods Ruin Windows**—A food manufacturer ordered window cartons from a box company, but did not state what food was to be packed in the containers. He did not realize that different types of window material are required, depending not only on the size of the window, but also on whether or not the product is loose, or sharp-cornered. The punishment that the window must withstand should also be considered. Whole runs of boxes have been ruined when sharp-cornered foods like macaroni or broken candy cut through a window that was too light or too brittle, resulting in unsalable packages.

13 **Should Have Changed Adhesive**—When window cartons have the board material changed, or the window is changed from regenerated cellulose to cellulose acetate, the adhesive should be changed to suit the new materials. Failure to do this will result in all the windows becoming loose and falling out after a short period of time. In two cases, losses from this cause ran into thousands of dollars when the manufacturer failed to make tests that would have shown whether or not the three materials, the carton board, the window and the adhesive, would work satisfactorily together.

14 **Ink Flavor in Food**—Offset (printing which has been transferred from other printing to a place where it has no business to be) on the inside of printed cartons is a serious matter if the packages are to contain food. Aside from conveying the appearance of extreme carelessness, offset may contaminate the food with ink flavor and odor.

15 **Ignorance of Special Requirements** of some foods for proper packaging is the cause of many packaging errors. Confectioners and bakers often try to use packages that were never meant for the type of product enclosed, and the non-technical salesman eggs on the prospect, merely to reach a sales quota.

The so-called moisture-proof package is the worst violation of proper packaging with these products. For example: a confectioner reasoned that his fudge dried out because it was not wrapped air-tight. He proceeded to seal it in, three layers in a box with wax dividers between the layers. Then he covered it and sealed it with an air-tight seal. He sent the fudge to the retail shops in the summer. The temperature rose; but his fudge *sunk*. For it was not allowed to breathe.

16 **Chip Board Always Needs a Liner**—A satisfactory and low-cost material to give strength to a carton, chipboard is a material that most food manufacturers avoid placing in actual contact with foods. Wide experience with it indicates that its actual physical contact with foods inevitably results in absorbed off-flavors or odors unless some form of impervious liner is used to prevent it. This seems to be true even in well ventilated packages, though such ventilation lengthens the merchantable period to the point where a very fast moving item can be consumed before anything serious occurs.

17 **Choose Materials to Suit Machines**—It is a mistake not to follow the packaging machinery manufacturer's specifications as to the materials, such as cartons, labels, adhesives, etc., and equipment he makes. In most cases, the machinery manufacturer has tested various materials with the machines that he makes, and consequently is in a position to make definite recommendations. When these recommendations are not followed, especially when cheaper materials are substituted, packaging troubles are likely to follow.

18 **Greaseproofing in Wrong Place**—To prevent grease or oil in foods from getting onto the packaging materials of cartons, cups, and fiber cans it is customary to use something like glassine which is grease-proof. This should, however, be employed as a liner—not as a lamination. When glassine is sandwiched between two layers of a grease-absorbent material, it may prevent the grease from "lamp-wicking" through the container to the outside and causing a spot. But various substances in the other paper or board will nearly always accelerate the formation of rancidity in the grease. Spoiled goods in a spotless package are no better than spoiled goods in a greasy package.

19 **Paraffin Is Not Impervious**—A recent experience with cartons proved to be an expensive headache. In his desire to produce a specific color, the carton maker used a white ink to reduce the intensity of a colored ink. As a result, even though the carton was heavily paraffined, a definite carton-flavor resulted in the product.

The white ink contained a considerable concentration of zinc oxide. It is probable that the acid in the moist food product (butter) reacted in some way with the zinc oxide to produce the flavor defect which ensued. In other words,

paraffin does not always prevent transfer of moisture, though it may prevent any moisture deterioration of the board, i.e., water-proofs it.

The incident resulted in a claim of $1,500 on the carton maker, and a considerable loss of business to the food manufacturer.

20 **Improper Printing of Carton Flaps**—A frequent error in plants where top and bottom carton sealers are installed for the first time, is ordering cartons printed so that the flaps cannot be folded down in proper sequence without exposing unprinted flaps. It's an old story of the food manufacturer's failure to follow through in having cartons printed in the proper sequence for use on automatic machines. Many a carload of cartons has been rendered worthless for this reason alone.

21 **Supplier's Error Costly**—In the packaging of one item of a line of dry products it was decided to use a window carton. Particular care was used to make certain that the window would be firmly fastened in place, and be strong enough to withstand the hazards of shipping.

After delivery it was found that these cartons carried with them a very disagreeable odor of camphor. This came from the transparent material used in the window and from the adhesive used to fix it to the carton.

In this case supplier had failed to furnish same material in finished product as he did in sample. All were rejected.

WRAPPING

22 **Over-Packaging Stops Breathing**—For a long time a considerable number of manufacturers of cereal products fell into the error of packaging precooked cereals with *two layers* of paraffin paper, with the result that there was practically no breathing whatever. And in consequence, if even an infinitesimal degree of rancidity developed, it was very obvious on opening the package; whereas, if only *one* paraffin wrapper was used, the natural breathing (barometric "pumping"—Ed.) would so reduce the odor of rancidity that it would not be obvious to the purchaser.

23 **False Economies, Costly**—It is false economy to select wrapping materials below the required specifications (i.e. proper size and caliper), for the ultimate result has many times proven a great loss. Sometimes the loss has exceeded the original cost of the proper stock.

24 **Foil Metal Troubles**—Metal foil in rolls occasionally gives trouble because it is sometimes too brittle to fold properly, or sometimes too soft to feed properly in automatic machinery. If a shipment of foil possesses these unfortunate characteristics there is nothing the food manufacturer can do about it.

25 **Improper Wrapper Storage** — Don't ever store wrapping materials under conditions contrary to recommendations submitted by suppliers. The ability to comply with such suggestions will mean closer harmony between supplier and food manufacturer. Also it will forestall the possibility of wrapping difficulties.

26 **Cellulose Wrapper Must Stand Transit**—Packages overwrapped with transparent cellulose may look grand leaving the end of the production line and going into the shipping carton. But how will they look when they reach their final destination? If ends which are not completely sealed down come in contact with each other and chafe inside the carton during shipment, all too frequently they will tear. The result is a package with broken or torn ends, defeating the purpose for which the transparent cellulose wrap was used. The same unfortunate result may be expected if too much adhesive is used, or if adhesive application is sloppy, resulting in packages sticking together in the carton and tearing when removed.

27 **Failed to Test Suitability**—The sales and advertising department went artistic on us, choosing a heavily printed wax paper in place of the lightly printed one previously used for wrapping a food. After it had been in use for a short while, a "printing ink odor," mild but nevertheless disagreeable, was discovered apparently on the surface of the wrapped food.

28 **Wrapping Hot Foods, Unwise**—To attempt to wax wrap foods still hot from the ovens—such as crackers, flakes, cereals, salt, etc.—without cooling sufficiently is a serious error. The wax wrapping of hot foods seems to create conditions suggestive of rancidity and other evils which reflect unfavorably on the food when purchased by the consumer.

29 **Low Melting Waxed Papers**—A mistake occasionally encountered is the one where the food manufacturer uses a waxed paper wrapper in which the melting point of the wax is so low that the heat-seal opens up at room temperatures.

To avoid this difficulty the melting point of the waxed paper should be at least as high as 135 to 139 deg. F.

30 **Bought Machine—Kept It Secret**—A bottled product had been wrapped in a special printed opaque wrapper for many years with entire satisfaction. Then a large shipment was rejected as unsatisfactory. Upon investigation, it was found that the manufacturer had developed and purchased a machine to replace his former hand operation without advising the paper manufacturer.

After short experimentation it was possible to develop a sheet, identical to the eye with the old one, but somewhat softer, that would work rapidly on the new machine. In the meantime, however, production had been delayed, and there was a sizable loss in unusable paper.

31 **Package Not Tight Enough**—A manufacturer of a cereal product decided to package it so that it would be absolutely invulnerable to insect infestation. After considerable investigation, the package selected consisted essentially of a cardboard carton, over-wrapped with metal foil, on which the label was printed. There were the assurances from the U. S. Department of Agriculture that only one rare species of flour weevil possessed the power of boring through a metal foil. It was therefore felt that the armor of this package was nearly perfect.

After the product had been on the market a while the manufacturer was very much surprised to find instances of infestation in his product by weevils of a type that were unable to bore through the metal. Indeed, no bored holes could be found in the infested packages. It was discovered instead that a chink had been left in the armor. The top and bottom outer slots of the inner carton were cut a little short so that they did not extend entirely to the carton's edge. When the foil overwrap was applied, a narrow, open tunnel was left along these two edges. Communication to these tiny tunnels could be had by going under the adjacent fold of the foil at the top and bottom. An insect, by taking a very devious route, could gain entrance to the package without the necessity of boring through the metal.

32 **New Stocks Need New Adhesives**—It is not uncommon for manufacturers who wrap their containers in various moisture-proof paper stocks to change from one type to another without giving any consideration to the adhesive. This is especially so in late years when so many new types of grease-proof and water-proof stocks have been put on the market. A change from dry-waxed to wet-waxed paper calls for a change in adhesive in 99 cases out of 100.

LABELS

33 **New labels should be tried out** on the labeling machine before being ordered. A label may have a beautiful appearance but, due to the texture of the paper, it may be impossible to run in the labeler.

34 **Unauthorized Label Changes**—A sure way to get into trouble is to change anything—even the color—of a label for a packaged meat product without consulting the Bureau of Animal Industry, U. S. Dept. of Agriculture, if the plant is under B. A. I. inspection.

And the label of any product bearing the seal of the American Medical Association should not be altered in any way without submitting it to the proper authority.

35 **Gluing Lap Missing**—A large manufacturer of a small item using a lap label purchased a supply of labels from a different source of supply. The labels they had used for years were printed with a plain edge, permitting excellent work with an ordinary type of glue. But the new labels were varnished over the entire surface, making it impossible to get any production until a special adhesive was designed with ingredients that would cut through the varnished surface.

36 **Wrong Net Contents**—A new baby food in liquid form was packed in a tin can. Labels were ordered with net contents expressed in terms of both avoirdupois and fluid ounces. But the packer had neglected to ascertain the specific gravity of the liquid food and had computed his fluid-ounce declaration from the specific gravity of water. The result was that it was discovered it was impossible to put the declared number of fluid ounces into the can.

37 **Lacquered Labels Shrank Unevenly**—A user of labels having a white border on top and bottom found that these borders became uneven in width or non-existent on one edge when a shift was made from varnished to lacquered labels.

The varnished labels were run off on a press without the application of heat. The lacquered labels were run through an oven with a resulting uneven shrinking of the label paper. Consequently, when a lot of lacquered label blocks were cut on a cutter, the white margin between the individual labels on a sheet could not be split accurately as they could when varnished labels were used. The only way to overcome difficulty was to discontinue use of white margin and to group the electroplates from which the labels were printed.

38 **Inattention to Label Details**—Often on varnished labels no attention is paid to the gluing or pasting lap, so that a particularly difficult adhesive job results. Or the wrong kind of paper, or a cheap paper is selected which is very little cheaper than a good paper when looked at in view of the ultimate cost of the label. Staining of the label often results from the latter cause.

In other cases a poor choice of inks is made in printing the label, and these inks often change color with the paste used. A little attention to such matters before final approval of labels would prevent this mistake of packaging.

39 **Label Coating Had to Withstand Heat**—A syrup manufacturer found that the coated labels on his tinned containers marred or became defaced during shipment when put on while cans were hot. Correction was attempted by making comparative marring tests under shipping conditions on different types of coatings available for use on labels.

Even though the results obtained from these tests were used as guides for the correction of the difficulty, cans bearing marred labels continued to reach the grocers' shelves. An important factor which had been overlooked was the fact that the shipping tests had been made with cold cans; a condition which was easy to have with experimental runs but not likely to be duplicated with volume production runs.

Marring tests were repeated, by using *hot* cans and a vibrating test box which would subject the labeled surfaces to impacts comparable to those received during handling and shipment. Results obtained from this second set of studies soon made possible the selection of a coating which did not mar when the labels were put on hot syrup cans.

40 **Label Inks Need Time to Set**—One food manufacturer changed his label design, adopting an aluminum foil paper heavily overprinted with dull black ink. This label would, undoubtedly, have been very effective if it could have reached the retail outlet unmarred by production handling. Unfortunately, several things were wrong. First, the labels were not seasoned long enough after printing and before use. Second, no one in the organization had experience with lusterless inks. The consequence was that the wipers of the labeling equipment wiped a good part of the black off the foil, to which it did not adhere very well.

Printing of foil labels has, since then, been greatly improved, especially when glossy inks are used, as these seem to adhere better than dull inks. In any case, a new label should not be adopted without thorough testing, and new labels should always be seasoned for a time in order to permit the inks to set thoroughly.

41 **Special Care for Lacquered Labels**—Several problems arise in the use of lacquered and varnished labels. One company that decided to adopt lacquered labels made its first mistake in providing for the use of its new labels *after* stocks of the old labels had become exhausted. It would be pointless to tell of all the troubles that arose. It is sufficient to say that lacquered and varnished labels should be printed on 55 lb. litho-coated (one side) paper and that the coating should be as light as possible. Also, the labels should be seasoned for at least two months in an atmosphere averaging 70 per cent relative humidity, before they are used. The labeling equipment should also be designed so as to place a thin film of glue over as much as possible of the entire labeling surface. Unless lacquered and varnished labels are firmly bonded to the container surface, blistering is sure to result, because there is a difference in the absorptive properties of the two sides of the label.

BAGS AND ENVELOPES

42 **Omitting Selling Message**—In connection with printed transparent containers, one is frequently aware of the shortcomings of the copywriter in preparing the message for the printed package. Important points regarding the enclosure are frequently omitted when they might just as well be included in the exterior package design. The result is, of course, a loss in sales effectiveness of the package.

43 **Using Competitor's Samples**—The food manufacturer should always use his own actual product in fitting a package to it. This is particularly important in packaging foods which he has not previously produced or packaged. He should not send a competitor's product, or specifications and measurements to the firm who is producing his packaging materials. Also he should be liberal with samples for the use of the packaging firm, so that actual measurements can be made. In the case of a perishable product there is often a lot of shrinkage taking place so, that in products of this nature, actual measurements should be taken when the product is absolutely fresh.

44 **Used Competitor's Line**—A manufacturer wanted to go into the noodle business. He wasn't in it yet. He advised the salesman to use the size of a competitor's line to get the right size for the new package—a transparent bag.

After the bags were manufactured it was found that the food manufacturer intended to use an altogether different type of noodle. And consequently his new bags were too small. This threw his whole merchandising program out of line.

45 **Wrong Colors Catalyse Rancidity**—A company packing potato chips in cellophane bags decided to dress the product up by using a variety of colors in addition to the standard transparent bag. The idea was to enable them to produce mass displays of the product which would be colorful and unusual. Shortly after the move was made, complaints about rancidity in the chips increased abruptly. It soon became apparent that chips packed only in bags in certain colors were causing the trouble, while chips in bags of other colors showed unusually good keeping qualities. Investigation disclosed a fact, previously unknown to that company, that certain wave lengths of light catalyzed the rancidity reaction in fats and oils. In the bags of colors which permitted these wave lengths to go through, the chips turned rancid rapidly. But in the bags that reflected these wave lengths (greens and yellows) the chips showed good keeping qualities.

The cause of this packaging mistake was simply a lack of information on a rather new development of technical knowledge. The correction of the mistake was accomplished by merely eliminating the colors that were permeable to the injurious wave lengths, and retaining those that reflected these bands.

46 **Containers Too Large**—From time to time manufacturers use a bag too large for the quantity of food being packaged, with the result that the bags are only half or three-quarters full. The result is not only poor display, but increased cost through breakage in transit caused by the contents shifting, etc.

47 **Protect Shortened Products From Light**—Cookies in transparent or nearly transparent packages were returned to the plant manager's office as having an "off-flavor." Technical examination revealed that the flavor was decidedly tallowy, that the packages of cookies had been displayed exposed to sunlight, and that the package did not possess any properties of protection for the crackers.

Since the flavor and keeping quality of biscuits and crackers are affected by relative short exposure to light, they should be packaged so as to have protection against the rancidity activating effects of light.

48 **Paper Change Disrupts Factory**—A packer of dry products places twelve one-pound bags in a large multiwall bag, then seals the latter with tape. Specifications had been set up to show the weight of the kraft paper and the multiwall bag. For years they had operated with no trouble. Then suddenly in the middle of the busy season a queer sort of trouble developed.

After the bags are filled, it is the practice to stack them

on the trucks in piles. But now the bags could not be held in piles; neither could they be handled in trucks. The bags fell off in every direction, and the entire system of handling fell down because the bags had suddenly developed a slippery smoothness. Reason: the bag manufacturer without notice had changed the type of paper to a water-finished kraft. The only way to get out the usual production was to rush in a new supply of bags.

The smooth water-finished kraft bags were returned for credit.

49 **Material Must Resist Product Action**—Packers of finely ground materials, such as dry mixers and certified food colors, have experienced considerable difficulty with packets made from transparent, air-tight, moisture-resisting, coated nitrocellulose stock. The difficulty intensified if the powdered materials contained an essential oil flavoring ingredient.

In the first instance, the coated nitrocellulose stock became dry and brittle to the point that it cracked and split easily. The contents spilled out of packets upon handling, or became subject to contamination or deterioration even when spilling was avoided through careful handling. Apparently the finely divided moisture- absorbing contents took sufficient moisture from the nitrocellulose stock to destroy its pliability and resistance to cracking and splitting.

In the second instance, the volatile constituents of the essential oil flavoring ingredient attacked and weakened the coating on the nitrocellulose stock to the point that the packet broke easily upon handling with resulting spilling of the packet contents.

A solution of this difficulty was found by selecting a stock from which the transparent packets are made to get a material that was not affected by the powdered contents. Possession of a stabilized resilience and pliability were the properties sought for.

Another troublesome difficulty was the flexing of the packets during handling and shipment. Repeated flexing caused pin holes and leakages. This difficulty was avoided by having the containing carton made so that the packets are packed snugly, with the result that flexing is no longer possible.

GLASS

50 **Protection From Sun Needed**—An important precaution for bottled beer is to protect it from exposure to sunlight after it leaves the brewery. This is accomplished by placing a cardboard cover on each case. The ends of the cover are turned down and are long enough to cover the inside of the hand holes by which the case is carried.

51 **Bottle Necks Were Too Small**—Several carloads of a newly designed bottle were delivered with an opening too small to accommodate the filling valves with which the bottling plant was equipped. In this instance about $300 was spent in buying special valves to handle the small necked bottles. And the cost of packaging was considerably increased by the slower rate of filling through smaller opening.

52 **Failed to Allow for Expansion**—Failure of a high percentage of gallon-size glass jugs used by a packer of molasses occurred when the filled containers were sterilized in a bath of hot water. The trouble was at first blamed on the design of the containers, as it occurred only in the 1-gal. size, not in the smaller sizes. Later, it was determined that insufficient headspace was being allowed in the 1-gal. size. During sterilization the heated molasses expanded sufficiently to fill the jugs completely and caused many to fail. Glass containers should be designed to hold the rated contents with sufficient headspace allowance, and should not be over-filled.

53 **Bottle Change Made Labeler Useless**—A food manufacturer in Chicago decided that the round bottle he had been using should be improved in appearance. The advertising department accordingly redesigned the label and the bottle. The roll-on label previously used was kept, but the shoulder of the bottle was decorated by means of a series of concentric rings.

Since the production men were not consulted, the advertising department did not realize that, in effect, they had created a tapered bottle. As the concentric rings around the shoulder of the bottle were about three thirty-seconds of an inch thick, the diameter of the bottle at the shoulder was increased by three-sixteenths of an inch. The base of the bottle, being unchanged, remained at the old diameter.

Naturally, when these redesigned bottles were fed to the roll-on labelers, they had a tendency to roll to one side, just like any other tapered bottle. Consequently, to get the labeler to work properly, it was necessary to change it, so as to compensate for the difference in diameter between the heel and shoulder of the bottle.

54 **Leaky Closures Caused Graining**—A glass tumbler doesn't leak, reasoned a confectioner. Therefore it can be used as a package for hard candy. But it grained-off anyhow. Now he knows better and tests his tops to be sure they are air-tight.

55 **Paneled Bottle — Unexpected Cost** — Changes in shape or style of container cause unexpected trouble in many instances. One concern had used an oval label on a six-ounce square bottle with great success. They then changed to a bottle having an oval panel in which the label was to be placed. But, when these new containers were run through their labeling machines, the wipers failed to press down the edges of the labels. This failure occurred because of the depression of the label in the panel. The result was that each label had to be rubbed down by hand in order to prevent the edges from curling.

56 **An Unpredictable Problem**—A line of roasted and raw nut meats were packed in glass jars, vacuum sealed. As these products aged, particularly under warm conditions, an unsightly white deposit formed on the inside glass surfaces. This deposit was a soap formed by the reaction

between the nut oils and the free soda from the glass. Apparently the nut oils were so easily saponifiable that the reaction proceeded at ordinary temperatures. This soap deposit not only ruined the appearance of the product, but soon permeated the nuts and spoiled their taste.

It is probable that the particular type of glass used was the responsible factor in this case. Glass containing no free alkali would not, of course, cause a reaction of this kind. Yet it was hardly to be expected that the packer could foresee a possibility like this and investigate the reaction of the glass in advance.

57 **Fused-On Color Labels Need Care**—While the following applies to bottles having fused-on or applied color type labels, their use should not be construed as an error of packaging, though they introduce problems.

But unless the bottles are handled properly in the plant, this type of container will not give the satisfaction for which it was devised. The fused-on or applied color type of label is an over-glaze which fuses at a lower temperature than the body of the bottle. And thereby it possesses less resistence to corrosion than the parent glass on which it is applied. Hence it is found that care must be taken to keep this type of label from being unduly etched in the soaker solution in the bottle washing machinery. The problem is not so severe in the market milk industry, but in the carbonated beverage industry, the bottles are sterilized by the action of the caustic content of the soaker and no use is made of a chlorine rinse as is customarily the case in dairies.

Fused-on labels will normally withstand an exposure to washing solution of 2 per cent caustic plus 1 per cent of other alkali at 130 deg. F. for a short time. If, however, the bottler runs the alkali or caustic content to a higher figure in an effort to "super-sterilize," or if he raises the temperature, or if he leaves it at a higher figure after washing a batch of previous bottles which had paper labels that were difficult to remove, the chemical corrosion is so rapid that it may work adversely upon the applied color. Likewise, carelessness such as leaving the bottles in the machine over a one-hour lunch period, or still worse, overnight, or very much worse, as over the week-end even though the temperature falls markedly—this practice raises Old Ned with the labels and in some cases has actually cut them off.

In fact, bottle-washing practices such as the foregoing are none too good for a regular bottle, even though it has no applied color.

SHIPPING CONTAINERS

58 **Waterproof Separators for Beer**—In cases of bottled beer it is important to have water-proof separators, because the case affords no protection from rain if a shower occurs during delivery. Under such conditions non-water proof separators soften to an unattractive soggy mass.

59 **Wrong Colored Staples**—A Chicago shipper of food products went to the expense of having an attractively colored shipping carton designed. This was held together by stapling wire which detracted from its appearance. By changing to the use of colored stapling wire that matched the coloring on the carton a great improvement was made in the appearance of this shipping container.

60 **Ignorant of Federal Specifications**—A manufacturer, who had never had any experience with government orders, recently received an order from the Boston Navy Yard. He shipped the goods in his regular domestic freight corrugated box, but later had to repack by transferring the contents of the entire shipment to new boxes which had to be made to order. He now knows that shipments to any departments of the United States must be made in containers conforming to the "Federal Standards Specifications."

In many instances, notably in respect to waterproofing, the Federal specifications vary from the regular domestic freight specifications.

61 **Ignorance of Freight Regulations**—A user of corrugated containers was penalized by the railroads, and he was about ready to abandon the use of corrugated containers because of his inability to determine why the penalty was assessed. Investigation showed that he had simply omitted, through ignorance, the use of a standard clause which is supposed to be applied with a rubber stamp on the bill of lading covering all shipments in corrugated containers.

62 **Closures for Damp Places**—Moisture-proof carton sealing or case sealing is imperative for cartons which are to be stored under refrigeration. Or for cartons that are to be stored in dampness. The seal must be one which will not let go because of moisture. Should the bottom flaps open up while a carton or shipping container is being carried, the contents are likely to drop out and be lost or damaged, if not actually destroyed. Wire stitching or stapling for such a closure is a practical method of avoiding trouble from this source.

63 **Container Material Gave "Off" Aroma**—A baker had been sold on the virtues of a fresh bread shipping container made from a new type of pulp board. Very shortly after beginning to use the new shipping boxes complaints were made that the bread had an objectionable odor.

By the process of elimination the source of the objectionable odor was traced to the pulp used in the board from which the containers were made. Upon going back to the shipping boxes previously used, no objectionable odor occurred in the bread.

64 **Labeling Fourdrinier Kraft Boxes**—A manufacturer who used a great many different brand names felt that he could not afford to have each of these names printed on his corrugated boxes. As an economy measure he was accustomed to paste the label on the end panel. This plan worked out very well on jute containers but, when he adopted Fourdrinier kraft containers, he found that their porous nature prevented the label from sticking properly.

The remedy was to add a little vinegar to the moistening water. Later this remedy was made still more economical by using a small portion of acetic acid instead of vinegar.

65 **Different Boxes: Different Glues**—A very economical adhesive of thin consistency for sealing the flaps had been developed by a shipper who had always used jute corrugated boxes. When he adopted the more modern Fourdrinier kraft containers, he insisted on retaining this same adhesive. Unfortunately, the porous kraft absorbed most of the adhesive and, although the flaps appeared to be sealed properly, they often opened up in transit. When he was properly instructed regarding the difference of porosity of jute and kraft, he consented to use a thicker adhesive which remedied the condition—especially for hand sealing.

66 **Four Errors**—1. Failure to test and approve cartons which are to be handled on automatic machines.

2. Employing artists not familiar with package production methods. This often causes confusion and expensive revision of designs.

3. Failure of buyer to arrange close cooperation between engraver and package manufacturer when engravings are purchased separately.

4. Failure to give complete information as to the nature of the product to be packed. The nature of the product sometimes has an effect on the selection of printing inks as, for instance, the need for use of alkali-proof inks in connection with certain soaps and soap products.

67 **Give Shipping Case Maker All Facts**—Box sizes must be accurate. Proper box size must be specified and the box manufacturer must make these sizes uniform to the specifications. The best way to obtain the proper size of shipping box is to send an entire case of the containers to the firm which is furnishing the boxes. At the same time you should explain to them whether or not you are using an automatic boxing machine. Also, explain whether or not the cases are sealed on an automatic box sealer.

The outside flaps should always meet, and the containers inside (cans, bottles, etc.) must be properly and firmly held in place.

It is important for the person from whom glue for closing the cases is obtained to know whether it is to be a hand-closed job or a machine-closed job; also the type of box that is to be glued.

TIN CONTAINERS

68 **Keep Product Out of Can Seams**—Complaints of bad seams from canners of tomatoes, spinach and green beans frequently turn out to be caused by salt crystals or stringy vegetables being rolled into the seam. This foreign material in the seam forces the body hook down before the cover hook can come under it.

69 **Overfilling Makes Bulges**—Tomato canners sometimes overfill cans. As a result, cans having flat ends when shipped in fall or winter, develop bulges when the weather warms up. The contents of such cans is perfectly good, but they are not salable.

70 **Allowing Cans to Sweat**—Storage conditions of canned foods often produce unfortunate results. Many times sweating and rusting occur as a direct result of improper storage. If cans are already labeled, the sweating may dampen the labels and compel removing them by hand and relabeling. Which is expensive and needless. On the other hand, if the cans are unlabeled, the can may rust and the rusty stains may cause subsequent label trouble, as well as be obnoxious to the ultimate consumer.

Keep storage temperatures uniform and above the dew-point.

71 **Loose Covers**—One very unfortunate mistake in packaging is to assume that a friction-top can or a slip-cover can is necessarily tight enough for protection where, at least, a reasonably tight seal is necessary to prevent moisture-vapor gains or losses in confectionery. They can be made tight, but too often they are loose enough to make trouble.

72 **Forgetting Odors That Cling**—A butter manufacturer in a far off country was making his own cans in which to pack his butter. For reasons of economy he also made his own can-sealing compound. But his customers found they were receiving merchandise that had a very definite taint, which resulted in claims of sizable proportions. After that he purchased a sealing compound that did not taint his product.

73 **Lack of Attention to Detail**—Lack of attention to detail is often shown in the final closing operation on goods packed in tin cans. Where no attention is paid to the seaming operation, the seamer rolls are allowed to become worn, and are mal-adjusted by mechanics who are not thoroughly conversant with closing machines, with the result that many leakers appear in the finished pack. Had the packer been a bit more vigilant in his inspection, and worked more closely with his source of supply of cans, and followed their service man's advice, a good deal of lost production would have been avoided.

74 **Copper in Food Ruined Containers**—After a few months in storage every large tin container of a liquid food product perforated, leaked and was the basis of a claim against the manufacturer. He in turn blamed the container manufacturer. And the claims and counterclaims were vigorous. Finally it was discovered that a mere trace of copper in the food, about 5 parts per million, was causing the perforation. This contamination was picked up from the equipment.

Copper, in amounts over 1½ parts per million, will usually cause some form of trouble, off colors, bitter and harsh flavors, and even results in container perforation or darkening of interiors.

75 **Labeling Cans Too Hot**—Often there is a tendency of some men to try to use pick-up gums and cements on a labeling machine when the condition of the cans calls for a different adhesive. If the cans are too hot, you have the pick-up gum striking through the label. If too cold, the can may not pick up the label at all.

76 **Rough Handling May Cause Leaks**—A frequent cause of leaks in cans is rough handling after the cans are labeled and cased. This causes the cans to dent each other close to the end seams, distorting the seams to the point where they leak.

77 **Don't Assume All Cans To Be Alike**—When the packer fails to tell the can maker about the use to which he intends to put the container, trouble or failure may result. Such bad results in the final package are often traceable to this lack of foresight. Many can makers refuse to sell unless they have full information.

78 **Too Many Jobs for One Container**—Attempting to use one container for too many purposes is a mistake. Such an attempt many result from an inventory problem, but a tin can is usually designed for the particular pack for which it is to be used. And the sealing compound is generally the best possible for this particular use. But, when the customer tries to adapt it to an entirely different use, failure often results.

79 **"Swelled Cans" But No Spoilage**—A packer of molasses was troubled by an excessive proportion of swelled cans reported by jobbers and retailers. His sterilization procedures were checked and found to be adequate. Also it was discovered that the molasses in the swelled cans showed no gas-producing decomposition, either from fermentation or from the spontaneous chemical breakdown of the sugars. Finally it was found that the cans rather than the product were at fault.

Molasses is a very heavy liquid and the tops and bottoms of the cans that were in use were too weak to hold it satisfactorily. The rough handling and bumping the cans received in shipment caused the tops and bottoms to spring out mechanically from the sheer weight of the molasses itself rather than from any gas-producing reaction inside. Of course, the so-called "swells" were entirely harmless. But it was impossible to convince the grocer or the consumer that such was the case.

This packaging error was quickly corrected by using stronger tops and bottoms for the cans. Heavier tinplate was specified and a new design was worked out, consisting of a series of concentric strain rings pressed into the tin which further improved resistance to springing. Now swelled cans are a rarity for this packer.

LINERS

80 **Fatty Product Needs Special Liners**—An eastern cracker and biscuit manufacturer found that his packaged cookies became rancid in a surprisingly short time. At first he was puzzled over the cause. He was using a shortening which had a high stability against rancidity.

Examination of his package revealed that the liner was not a grease-proof paper. Since the packages were kept at room temperatures, the liners absorbed fat from the cookies and were responsible for the development of rancidity.

Experience has shown that the development of off-flavors and rancidity in fat-containing bakery products is speeded up if the package or packaging material becomes grease soaked.

Use of a grease-proof glassine or vegetable parchment liner put an end to the difficulty and gave the package the normal and expected shelf life.

81 **Candy Lost Fat Content to Package**—Intent upon simplifying the manufacture of packages to contain high-fat chocolate confections, a confectionery manufacturer eliminated the fat-resistant vegetable parchment inner liner of the package.

The sturdiness of the package and its non-flavor-imparting properties were kept at a high level by using a 100-per cent sulphite manila inner surface instead of the news board backing previously used with the vegetable parchment liner. The exterior surface of the layer board was chip board in both instances.

Elimination of the vegetable parchment brought no outburst of complaints as long as winter and early spring weather conditions prevailed. However, during late spring and the summer months a different situation existed. The contents of the packages were denounced by consumer buyers as being "dry," "powdery," and "cocoa, sugar, and milk-powder mixtures instead of chocolate confections."

Careful examination of the packages showed fat discolorations on the outside label wrappers. Removal of the labels revealed a fat-soaked condition of the chip-board layer of the board from which the package was made. Even the manila layer of the board showed some fat marks.

With the omission of the fat-resistant vegetable parchment inner liner, the exposed edges of the chip-board layer at laps and folds came in contact with the chocolate pieces. Through wick action of this chip-board layer and the whisker-like projections from the manila layer, the softened fat was transferred from the confections to the walls of the package. This difficulty was overcome only when the fat-resistant inner liner was again made a part of the package.

82 **Assuming All Packages Are True**—Production of packages under commercial operating conditions results in certain variations, such as carton bulges due to overfilling or over-packing. This is a condition beyond the control of the manufacturer of the cartoning machine for it depends on the adjustments by the food manufacturer's operators.

Hence the food manufacturer must make due allowance for such variations when ordering the rolls of paper for liners. If the roll-width is correct for the perfect package, it is sometimes too narrow to allow a proper lap at the bottom of the carton *under normal operation conditions* above outlined.

Before ordering rolls of paper for a new machine, the buyer should confer with the machine builder to determine the proper specifications.

83 **Operations Too Close-Coupled** — In placing labeled bottles into cases, a brewer found that it is very essential to allow the necessary drying time to elapse to permit the labels to "set" after leaving the labeling machine. Otherwise they would scuff when the bottles were inserted into the cases. Later the labels were protected by installing a case packer equipped with guides to save the label.

84 **Test Equipment Before Purchase**—Never purchase labeling machines, much less install them, without a thorough trial of at least a half-day's run of bottles. One food company purchased a new type of labeling machine and was six months getting it into satisfactory operation after it had been installed. This resulted from the fact that the tests made on the machine before it was shipped were wholly inadequate. In this case, the trial of the machine with only a dozen bottles indicated nothing. The incident shows how dangerous it is to replace old equipment with new that has not been thoroughly tested.

85 **Failure to Raise Bottles**—With either the washing or the air blast method of bottle cleaning, the bottles should be placed upside down upon the blowing or rinsing nozzles. But it must be remembered that large glass particles may not be able to fall out of the bottle through the annular (ring shaped) space between the neck and the nozzle. Therefore, some provision should be made for raising the bottle, while still in an upside down position, or for withdrawing the nozzle, so that large particles can fall out.

86 **Product Gives Packaging Problem**—It appears to be dangerous, if not fool-hardy, to attempt to apply a machine to a different product in the same manner in which it has been developed for another, without much careful study. For example a butter maker tried out a new type of molding and wrapping machine which had been developed for handling oleomargarine. Inasmuch as this machine had been effective on oleo, he presumed that the same temperature and other conditions would prevail for butter.

But, it required three weeks of study by the butter maker before the proper conditions were established, and then several months more elapsed before it could be found out how to handle the product so that the corners would all be square and not rounded.

87 **Neglecting Aeration of Powders**—When buying fillers for packaging powder mixtures of unknown packing characteristics, it is essential to specify to the machine builder that the powder should be thoroughly sifted and aerated before test runs are made. In many manufacturing plants, especially those operating on a continuous basis, the powdered material is mixed and sifted directly into the supply hoppers and filling equipment. Thus the powder is in a condition of thorough aeration, differing greatly in packing characteristics from powder that has become deaerated during storage.

This was brought out by the experience of a maker of premixed cake flour. A barrel of this flour was sent to an equipment maker for a test run to determine auger sizes. In transit, the barrel of flour became thoroughly deaerated and packed. In consequence, when the test run was made at the machine builder's plant it was a simple matter to fill the required weight into the container. When the equipment was installed, however, great trouble was encountered in handling the material, because of its fluffy condition. New augers had to be obtained and the pressure control mechanism had to be entirely redesigned.

88 **Failed to Notify of Size Change**—A food manufacturer failed to advise the maker of a new wrapping machine, which was on order, of a change in the specifications of the package-size between the time the order was placed and the machine was installed. This caused much loss of time on final acceptance, needless expense to the machine maker for new patterns and extra machine work. And also a needless misunderstanding between machine builder and customer.

89 **Crate Required New Conveyor**—When ordering new wooden cases, one beverage company decided on a different board arrangement of the bottoms of the cases, believing that this would make absolutely no difference in the use of the cases. But, in actual practice, it was found that the spaces between boards exactly coincided with the small rolls of certain portable conveyors. It was impossible to use these cases on the conveyors, and new conveyors had to be purchased.

90 **Automatic Machines Need Attention**—An automatic filling or packaging machine does not require an actual operator. However, for good results in most cases someone should be in attendance to see that material is coming to the machine correctly and to look after containers, labels, glue and other materials. Then, if jams occur, someone is there.

91 **Poor Label Machine Care**—We find that for some unknown reason, labeling machines, although a high speed tool, are rarely kept in good mechanical order. When they are not given the proper attention, poor labeling results.

92 **Costly Special Equipment Needed**—A company new in the packaging field spent several hundreds of dollars in developing an unusual and novel container for their product. After the container was definitely decided upon, it was found that special machinery would have to be employed for fabricating the box as well as for filling it. The cost of the special machinery was prohibitive so the manufacturer had to abandon the special container.

The packager should always bear in mind that the package must be basically correct for fabrication and filling on standard equipment. The entire matter of economical packaging is one that demands the cooperation of the box maker, the designer, the filling equipment manufacturer and the package consumer.

PAPER CUPS

93 **Study Regulations Before Printing**—Food manufacturers using paper cups or other preformed packages, with the label printed directly upon the package itself, should make sure what printing is needed before ordering. Requirements of federal, state and local regulations should be considered in such matters as contents markings, description of product and address of producer. There is no way in which the design or printing can be corrected to insert this information after the packages have been made up.

94 **Ingredients Must Be Correctly Stated**—A food manufacturer gave his product a definite name which, together with the ingredients of the product, was included in the label-copy printed on the package. After the containers had been printed and delivered, it was discovered that the product was, in effect, an imitation and should have been so labeled. Also, it developed that certain ingredients mentioned in the copy were not actually included in the product. Consequently, the containers could not be used and new ones had to be purchased.

95 **Product Name Did Not Comply**—Food manufacturers should make sure that the names given to their products will meet with the approval of the authorities, before printed labels or packages are ordered. In one case a manufacturer purchased containers bearing the name "Ham Spread." After those packages were delivered, the authorities refused to allow their use, claiming the content of ham to be insufficient to justify the name. New containers labeled "Sandwich Spread" had to be ordered. The old ones were useless.

CONSUMER COMPLAINTS

Men Who Make and Use Packages Speak Out as Consumers

FANCY a food manufacturer forgetting his part as a producer of packaged foods, and speaking his mind as a consumer!

96 **More Appropriate Packages Needed**—It's no news to tell you that tomato catsup could be packaged more conveniently than it is; or that syrups are messy things to handle as put up at present; and so on through a list of those things which we know about and which, no doubt, their manufacturers have given more thought to than I know of.

97 **Grab Your Chair on This One**—Packages should be capable of being opened without the services of expert mechanics and hydraulic presses, but this subject is one on which I feel so strongly that I would have to write a book, including all the most violent words in the English language, to tell about it.

Perhaps I should also have to call on all the resources of foreign languages to make up a sufficient vocabulary. When I retire, if I can rise to the heights of Thomas de Quincey in handling the English language, I might undertake to write something on packages that cannot be opened. And this applies to a very large part of them—olive bottles which require Stillson wrenches, syrup bottles requiring crowbars, sardine cans which squirt oil, transparent cellulose packages requiring dynamite, etc.

ADHESIVES

98 **Adhesive May Discolor Label**—When a strongly alkaline lap paste is used in combination with a rosin-type pick-up gum, a rosin soap may be formed. This has remarkably penetrating power and will discolor light colored labels along the lap.

99 **Glues Can Be Too Good**—When used on reuse bottles. New glues should be tried out, not only to see whether they hold the labels on the bottles, but also to find out if the old labels will come off readily in the bottle washing machine. Also to discover whether the glue will cause trouble in the washer after a period of time.

100 **Hygroscopic products need special glues**—A packager of salt received a quantity of folding boxes from the box maker. They passed rigid inspection. The boxes were filled and shipped out to retail stores. Several months later complaints came in that the glue in the glue lap seam had ceased to hold and the boxes were falling apart.

Salt has a tendency to absorb moisture, and this moisture had dissolved the soluble glue which the box maker had used. An adhesive manufacturer was called in and he recommended an opaque glue. The difficulty was eliminated.

The packager should always know and specify the type of glue to be employed.

101 **Omitting Details of Operations**—Experience has proven that one of the major agents employed in the packaging of foodstuffs has been, in many cases, disregarded or overlooked. Adhesive manufacturers or technical specialists are best equipped to furnish the required information on this subject. But, in consulting the adhesive supplier, operating methods should be given *in detail.*

102 **"Chillproof" Glues Raise Hob**—A very serious difficulty can be brought about by a change in the type of glue to meet a specific trade condition. Because of the demands of the trade to overcome the problem of labels soaking off in the water-and-ice type of beverage cooler, numerous bottlers have tried changing from the usual type of label glue to the "chillproof" type of glue. As a result, many of them have

found that their bottler washers could not adequately handle the new glue and completely remove the labels. Hence the bottles came through spotty and with pieces of labels adhering to them, which necessitated the messy hand-job of "scalping." Similarly the "chillproof" glues will "ball up" a labeler badly in cool weather unless the operator keeps the glue tempered, or dilutes it out to compensate for the increase in viscosity. Also it is very necessary to pull the glue wipers, or applying arms, off the machine and put them in warm water every time the plant shuts down for more than half an hour, or else it will be very difficult to get them going again.

PACKAGE TESTING

103 **Don't Underestimate Packaging Costs**—Underestimating the cost of production of a proposed new package is a common error. Actual results under volume production often exceed the predicted cost to a prohibitive degree. Test costs should be determined from production runs of large samples, never from small ones.

Also the cost analysis should include the cost, inside the plant, of handling and shipping the goods in the new package. Occasional unhappy surprises can occur here, such as impossibility of material handling on the previous low cost basis.

104 **Lack of Preliminary Testing**—A large manufacturer of food products decided to put out a prepared flour mix. Previously they had always put out regular flour in unlined, but sift-proof, cartons. They decided to do the same with the new product.

Naturally the shortening came right through the cartons, badly disfiguring them. There was a serious loss and a long delay before the unhappy situation could be corrected.

105 **Omitting Complete Testing**—In the packaging of foodstuffs, one must first decide in a very definite manner upon a practicable manufacturing formulation of the food that is to be packaged. Then decide upon the shape, size and attractiveness of the container. Next, the chemist and bacteriologist should determine the shelf life of the food in this package. And then, a relatively large number of taste testers, who represent a true cross-section of the public, should give their organoleptic reactions. Leaving out any one of these four considerations constitutes a serious mistake and may spell the doom of the packaged food product, irrespective of what power may be placed back of its advertising.

106 **"Moisture-Tight" Paper Can, Wasn't**—A new powdered food product was packaged, one on which there was no previously accumulated experience for guidance. The container was a paper-sided tin top and bottom "can." It happened that the product contained a very high percentage of a very hygroscopic ingredient. As a result, slow moisture absorption took place through the paper walls of the "can" and the powdered product hardened into a solid mass, so hard that a hammer blow would not crush it. Many times returned shipments from jobbers and retailers were jokingly labeled "cement." Luckily this disaster was not a major one, for the product only had been out into a couple of trial markets under closely controlled conditions.

This packaging mishap appeared afterwards to be the result of sheer stupidity, especially since the product was known in advance to be hygroscopic. It must be remembered, however, that the product was entirely new on the market and that the "can" manufacturers claimed moisture proof qualities for their package, and that these claims were accepted at their face value. The packaging of this product was then regarded as a very minor problem, after the untying of many rough knots in the production of the product itself. Foresight only infrequently sees the danger spots in new ventures; no one could stand an egg on end until Columbus suggested breaking the shell.

107 **Supplement the Laboratory Tests** with field tests, for no completely accurate laboratory tests have been devised for judging the functional properties of packaging materials or these materials when converted into a package. Unless a packer feels absolutely sure of his judgment in interpreting laboratory tests, in relation to the job which the materials are expected to do in the field, he had better make thorough shipping and distributing tests of a package to be adopted, and allow ample time to test every geographical section in which he intends marketing.

108 **Does Package Have Endurance?**—Paint, varnish, enamel and other finishes do not always withstand the punishment of plant operations. Therefore all packages should be submitted to actual plant operations before final adoption. But don't stop testing there. Even when paint, varnish, enamel, etc., appear to stand up well during plant operations, the package may not remain in satisfactory condition until sold from the dealer's shelf. Sample runs should, therefore, be made under working conditions before contracting for package materials. And the resulting packages should not be considered as satisfactory without investigating their condition after a normal period on a dealer's shelf in test territory.

MISCELLANEOUS

109 **An Unusual Difficulty**—The sales department of a dairy company desired a special grade of butter. Several days were spent in a small northern plant to get them to produce the grade desired. The plan was to have the butter produced there, and shipped to the buyer's cutting plant for packaging under the buyer's own control.

Suddenly, without warning, the sales department decided to change the operation by having the packaging done at the creamery instead of the buyer's plant. The creamery continued to make the butter in the manner instructed, and then proceeded to cut and wrap it in equipment that was entirely different from the buyer's. This resulted in the butter developing a leaky body which became evident only ten days later when the butter arrived in an Eastern market.

On unloading a refrigerator car it was discovered that the

floor was covered with what appeared to be water. On further investigation it was noted that the water had run out of the package, and seeped through the shipping cases, wetting them in such a manner that it was practically impossible to pick them up without their breaking open.

110 **Inadequate Car Bracing**—Damage to shipments of cookies and crackers was found by a large biscuit manufacturing plant to result from movement of the packages in the car during transit and when stops-in-transit were made to unload part of the lading.

The trouble was practically eliminated by adopting the "Conbur" method of car bracing. This is a method developed by the Freight Container Bureau Association of American Railroads, and it can be used by any shipper. In this method, flush anchor plates are permanently set into the walls of the car.

Two, three or more vertical rows of these anchors, at each end of the car, are spaced so that the load at each end can be broken up into several units, as desired. Each anchor has a vertical steel pin. Around these pins are looped flat, flexible steel bands. A similar band is looped around the pin on the opposite car wall. The two ends of these bands are then brought around the load, tensioned and sealed. This holds the load secure in transit, but permits load to be readily broken in transit stops.

111 **Failed to Study Freight Tariffs**—A plant producing spray dried milk started to produce spray dried buttermilk from sweet cream butter in a form suitable for human consumption. Previously the dried buttermilk had been produced only for animal feeds.

The new buttermilk powder was packed in barrels the same as milk powder. Then it was discovered that the railroad tariffs covered dried buttermilk in sacks at a low rate but that the barrels would come under the "Not-Elsewhere-Provided" rate—a prohibitive one.

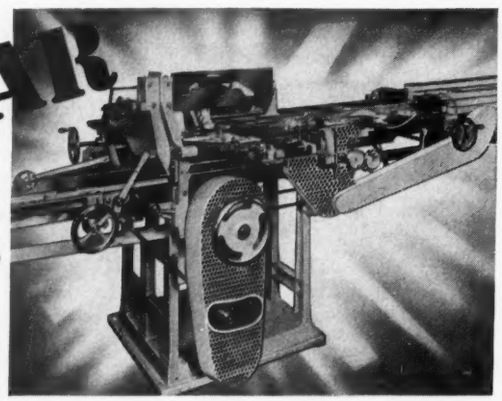
112 **Pool Car Pilferage**—A shipper of candy had the problem of shipping pool and stop-over cars for several customers. Complaints were received of shortages and damage to shipments. The troubles were eliminated by using flat steel bands around that portion of each carload intended for each consignee. At times, as many as six individually strapped ladings are made in a single car. Since adopting this practice, the complaints have ceased, and the loads ride better, without damage.

113 **Product Needed Ventilation**—Air tight pails cause losses when the product is one needing ventilation. A candy manufacturer placed his crystallized creams in a pail which was lined with a waxed liner. Then he sealed the top by placing over it another piece of waxed paper. This was heat sealed. His creams could not breathe and buckets of mush were returned to him for credit.

114 **Seal Allowed Insect Infestation**—There is the case of a candy manufacturer who carefully sterilized his nut toppings, but failed to seal them up against reinfestation. They stood on the floor where moths were flying; and the candies all came back.

(To be continued)

POPULAR
because it meets today's demands



A few of the hundreds of widely sold products that are wrapped on our machines.

Quickly Adjustable Wrapping Machine

Today, business demands extreme flexibility in wrapping machines—plus simplicity and low operating costs.

In over 200 plants our FA-Q has demonstrated that it meets these requirements 100%.

***Flexible*—Adjustable to an extremely wide range of package sizes, and adaptable to any type of wrapping material. Handles open boats, as well as regular packages. In many plants an entire line of products is being wrapped on it.**

***Fast*—Adjustments from one size to another are made by hand wheels in 10 minutes. No delays between different sizes. Wraps 40 to 100 packages per minute, depending on type of package.**

***Economical*—Requires only one operator. Equipped with Electric Eye registering device, the FA-Q permits the use of printed material in economical roll form, cutting material costs approximately 20%.**

***Simple*—and strongly built—the FA-Q can be relied upon to give years of dependable service.**

Compare your present wrapping methods with the many advantages offered by the FA-Q. Consult our nearest office.

Write for Literature

PACKAGE MACHINERY COMPANY, Springfield, Massachusetts

NEW YORK CHICAGO CLEVELAND LOS ANGELES

Peterborough, England: Baker Perkins Ltd. Melbourne, Australia: Baker Perkins Pty., Ltd.
Mexico, D. F., Apartado 2303 Buenos Aires, Argentina: David H. Orton, Malpu 23

PACKAGE MACHINERY COMPANY
Over a Quarter Billion Packages per day are wrapped on our Machines

Merchandising Hints AND HURDLES

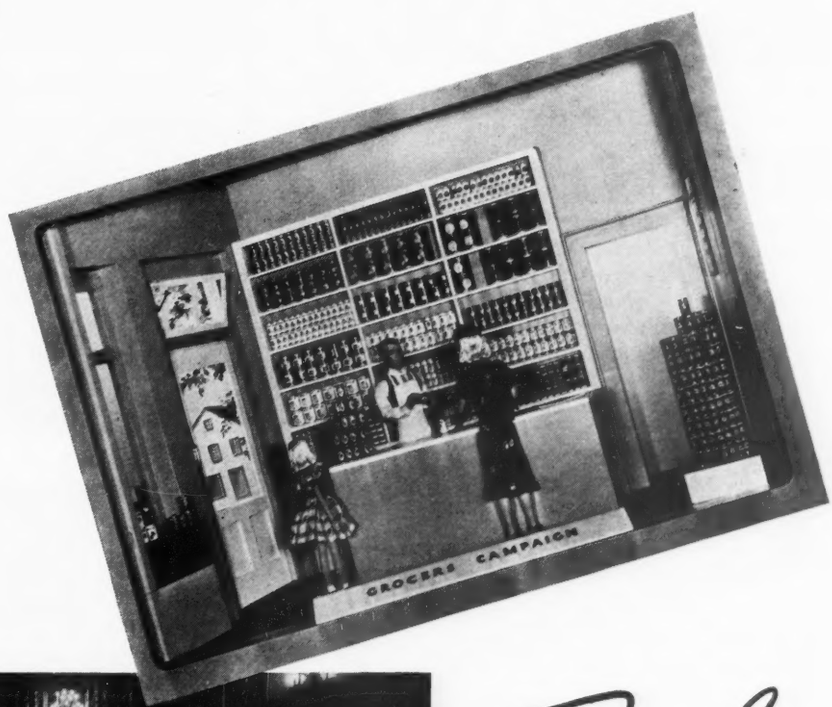
Improving Public Relations For the Food Industries

THE EXHIBIT of the American Can Company at the 1939 National Canners Association in Chicago depicted, by eight small dioramas, the services the can company is providing to improve public relations for the canning industry. Each diorama in the exhibit illustrated a service the can company provides to improve consumer acceptance for canned foods and to better general public relations for the canning industry. The exhibit illustrates the company's speaking service, testing kitchen, research laboratories, professional relations, convention exhibits, consumer educational material, grocers campaign and medical campaigns. Though the can company may render this service in a measure to further its own interest in preserving and increasing the consumption of canned foods, nevertheless, the canners get the benefit of these services to improve public relations. These are services *for* the food manufacturers. The effectiveness of these services could be greatly strengthened by more effort to improve public relations *by* the food manufacturers.

Chain Stores

MEMBERS of the Southeastern Chain Store Council representing chains in North Carolina, South Carolina and Georgia have completed plans for an extensive educational campaign. The Council is not to interest itself in legislative affairs, but to bring about a better understanding between chain stores and the public, and between chains and producers. The Council will attempt to show consumers that the chain stores are effecting beneficial economies, to show the farmers and manufacturers that the chain stores are effecting economies which result in higher prices for producers and manufacturers, to improve conditions between employer and employee, to insure that chain store representatives take their proper place in the affairs of the communities, and to outline and work out a proper press and advertising program.

If it has done nothing else, the agitation of independent grocers, with the enacted state and proposed national legislation to tax chain stores, has not only made the chains aware of how they are regarded by at least a portion of the populace, but has encouraged them to do something to try to remove the curse of their abstract absentee management policy.



Food DISTRIBUTION

New Packages & Products

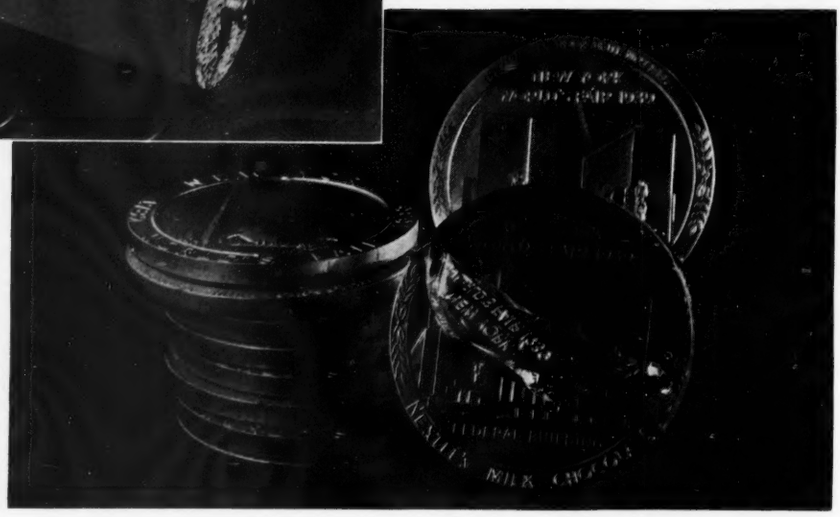
Bark for a Change

DURING THE HOLIDAY SEASON just passed W. F. Schrafft & Sons Corp., Boston, Mass., introduced a new seasonal package designed to create impulse sales through eye-appeal. This package, a cardboard container for peppermint wafers, has the appearance of a birch bark log. Packaged in an outside wrap of transparent cellulose, the birch bark log contains a metal knobbed drawer-like oblong tray in which the wafers are protected by an inside wrap. Each wafer rests in a pleated wax paper cup for further protection.

Increased Coinage With No Price Inflation

CURRENCY INFLATION usually means increased prices. The huge 1¼ oz. gold coins which have recently appeared on metropolitan retail counters

Food DISTRIBUTION



are one exception. Designed as a souvenir package, the gold foil covered chocolated disk of Nestle's Milk Products Co., Inc., New York, N. Y., are stamped with reproductions of the World's Fair theme building on one side and the federal building on the other. When the wrappings are removed, the chocolate maintains the same clear impression. This novel package, a 5-cent seller, capitalizes on a timely event and a compelling design to gain impulse sales and added consumer acceptance for an already well-established food product.

Package Recipes for File

KELLOGG CO., Battle Creek, Mich., has responded to the housewife's demand for recipes in convenient and permanent form with the new "All-Bran" packages recently placed on the retail market. Recipes stressing the use of "All-Bran" as an ingredient in a variety of new and tempting dishes are printed on the back of each of two sizes of packages. These recipes not only inform the housewife how best to use the product as both a cereal and an ingredient in other dishes, but also serve as a reminder to replenish depleted supply. The recipes are of index card size and may be cut from the carton and filed for permanent reference in the housewife's index card recipe file box.

Executives Discuss Methods for Keeping

Food Trucks *Clean Inside*

EVERY MAN in the food field who uses motor trucks to transport his products should be familiar with the best practices for keeping the inside of the trucks in sanitary condition. The problem varies with the products handled. And in the following symposium executives in different food industries tell how they keep their truck bodies clean.

Sterilizes Bodies Weekly

THE INSIDE of our truck bodies is cleaned with steam and hot water, soap where necessary, and sterilized as indicated below. Trucks that are in constant use should have the inside of the bodies cleaned thoroughly at least three times weekly—more often if necessary. Truck body interiors are sterilized weekly with a solution containing chlorine.

Trucks are not taken out of service for cleaning. This work is performed during the course of our regular truck-service period.

Occasional and thorough airing of interior of truck bodies after cleaning will very materially assist in minimizing mold and bacteria problems. Naturally, airing must be done in a clean storage room with adequate circulation of air.

Interiors of our truck bodies are constructed of either $\frac{5}{8}$-in. redwood or pine. — *Transportation manager of large mid-Western packing house.*

Employs Hot Water, Broom

TO CLEAN the inside of truck bodies we simply use hot water and a good stiff broom. Trucks should be cleaned daily and at the convenience of the garage caretaker. The vehicles can be cleaned when normally idle.

The same rule applies to truck bodies as to milk bottles—keep them clean.

We do not sterilize truck bodies other than with a steam hose. This is rarely done. As I have stated, with hot water and a stiff broom, no sterilizing is necessary. The inside of our truck bodies is made of wood.—W. A. GIFFORD, *Progressive Dairy Products Co., Racine, Wis.*

Cleans with Detergent

WE CLEAN the inside of truck bodies with a broom and Oakite. Cleaning should be done according to the rate of frost accumulation, and the trucks are cleaned while idle so that they do not have to be taken out of service. We don't sterilize the inside of our truck bodies in addition to cleaning them.

If trucks are cleaned often enough they will be free of mold, bacteria and dirt, and no other precautions are taken against these foreign substances. Our truck bodies are made of galvanized iron inside.—E. BARBER, *general sales manager, Ice Cream Division, Abbotts Dairies, Inc., Philadelphia, Pa.*

Trucks like this one, which is loaded with meat products, are cleaned thoroughly at regular intervals by progressive food companies.

Uses Broom, Hose, Detergent

WE CLEAN the inside of our truck bodies with a broom and hose. And our trucks are cleaned once a week both inside and outside. Cleaning is done at night when the vehicles are normally idle.

In summer, after the trucks are washed, we spray the inside with HTH, which keeps down mold or bacteria. The only way we sterilize the trucks is when we use this HTH in the summer time. The inside of our trucks is constructed of plywood. —LOUIS R. LIPMAN, *Parkway Baking Co., Philadelphia, Pa.*

Water, Steam Clean Trucks

WE HAVE only open truck bodies, these being used mostly for the hauling of vegetables and cans. When cleaning is needed, we wash the truck bodies out first with a water hose and then a steam hose. This cleaning is done at intervals as needed. We are not troubled with mold or bacteria with the type of trucks and products that we have.—R. E. CHITTENDEN, *treasurer, Perfection Canning Co., Inc., Newark, N. Y.*

Pointers on Cleaning

OUR TRUCK BODIES are washed inside with hot water and a soap solution and rinsed thoroughly with pressure equipment. We subscribe to a definite cleaning schedule, which in the majority of our operations is performed nightly, the vehicles being washed when normally idle. To permit drying out and prevent formation of mold and bacteria, the bodies are left open during the idle period to allow circulation of air through them.

Refrigerator bodies are sterilized as conditions warrant on inspection. Shelving and racks are removed, the interior scrubbed with washing soda, rinsed thoroughly and all exposed surfaces washed down with slab oil. After washing, a vehicle should be opened to dry.

The following observation may be in order in connection with the entire subject of vehicle washing: For external use avoid strong solutions. Only a neutral soap should be used. Where vehicles are washed frequently, such as in our industry, this same soap solution is adequate for inside washing unless for some unusual condition. Then and then only should stronger solutions of soap or washing soda be used.—F. L. FAULKNER, *Automotive Department, Armour & Co., Chicago, Ill.*

Food DISTRIBUTION

Food Technology

NEW DISCOVERIES & INVENTIONS

FOOD ENGINEERING

Sanitary Milk Bottle Neck Finishes and Closures

EXHAUSTIVE STUDY of quality control measures, to be observed in connection with fluid milk after pasteurization and bottling, show that the following conditions should be incorporated in the design and construction of bottle finishes and closures:

(*a*) Development of a bottle neck finish which will reduce to the minimum the lip area to be covered by a closure, resulting in a narrow pouring lip which will give no drip when the bottle is returned to vertical position after emptying part or all of its contents;

(*b*) Adoption of a sanitary closure which will cover the pouring lip area to prevent bacterial contamination of lip during handling of the milk-filled bottle.

A practical test for the efficiency of a bottle closure is to smear the glass just below the closure with a *B. prodigiosus* broth culture. Remove the closure and pour the milk. Several glasses of milk should be poured in succession and 10 cc. of milk from each glass should be put into sterile test tubes to be incubated for 48 hours. Development of red color indicates that the milk in the glass from which the test sample was taken came in contact with the bottle zone below the closure.

Purpose of the study, still in progress, is to indicate desirable future trends in sanitary closures for milk bottles. Fifteen different bottle closures have been studied.

The problem is largely one in physics because the adhesive forces of the glass surface over which the milk was poured was the principal variant after a uniform pouring technic was worked out for all bottles. The pouring technic centered around the use of the standard pouring machine described in Journal of Milk Technology, Vol. 1. No. 6., pp 5–14 (September 1938). Fresh Grade A pasteurized fluid milk was used in all tests as the standard pouring liquid.

Digest from Lloyd Arnold, Dept. of Bacteriology and Public Health, University of Illinois, College of Medicine, paper read before University of Illinois Dairy Manufacturers Conference, 1938.

QUICK FREEZING

Quick Freezing With Liquid CO_2

DIRECT CONTACT with liquid CO_2 under pressure freezes a chicken solid in 15 min. if carried out as provided for in U.S. Patent No. 2,137,902 granted to Charles T. Walter and assigned to Industrial Patents Corp., Chicago, Ill.

The product to be frozen is placed in an insulated pressure retort from which the air is removed after the closing of the air-tight head. Liquid CO_2 is run into retort to cover completely the products to be frozen. Pressure inside the retort is reduced to vaporize some of the liquid CO_2 to lower the temperature of remainder and to freeze quickly the perishables. The gaseous CO_2 is compressed, cooled to liquid state and returned to supply reservoir in a continuous manner during freezing period.

At the end of the freezing period the liquid CO_2 contents of the pressure retort are pumped out and returned to the supply reservoir to permit unloading and reloading of the retort with very little loss of the CO_2 refrigerant.

BAKERY PRODUCTS

Whole Wheat Bread

AN IMPROVED PROCEDURE for making whole wheat bread, which may or may not have fruits or nuts interspersed in the dough, is disclosed in an Australian invention. As described in Australian Patent 103,535 (granted April 28, 1938, to Wm. Dunstan, Brunswick, and P. L. Holmes, Melbourne), the procedure is to soak the whole grain in water till sprouting begins, then crush the grains and make the product up into dough. Yeast and fats are used as needed, and the dough may contain fruits or nuts if desired. Consistency can be improved, if need be, by blowing with cold or hot air or with steam. If preferred, the dough as first prepared can be dried, ground and used to make a fresh dough for baking.

BEVERAGES

Uses of Activated Carbon in Beverage Manufacture

ACTIVATED CARBONS, available in a variety of grades with different absorption properties, are useful agents for refining alcoholic and non-alcoholic beverages. A carbon known at Ecolit D, in the proportion of one or two ounces to 25 gal., effectively clarifies beer, wine or vinegar. Norit, a carbon used in sugar refining, serves well for lightening the color of brandies. Other varieties are used to improve aroma. Similarly, in preparing unfermented grape juice and other fruit juices, selected grades of active carbon can be used to good advantage either for clarifying, or lightening the color, or removing substances which impart undesirable odors or mask the desired characteristic odor.

Digest from "Active Carbons in the Beverage Industry," by E. Lehmann, *Deutsche Mineralwasser-Zeitung 42*, 524, 1938 (Published in Germany).

Metals Suitable for Wines

GREATER USE OF METALS in production and distribution of wine faces two problems, namely corrosion and the effects of metals on flavor, physiological action, keeping qualities and other properties of wine. Comparative tests were therefore made with aluminum, tin, copper, nickel, Monel Metal, Inconel and 18—8 chrome-nickel steel.

There was no measurable corrosion (determined by the weight-loss method) of Inconel or rustless steel. Tin was corroded rather severely, especially by red wines when aeration

(*Turn to page 177*)

Food Equipment News

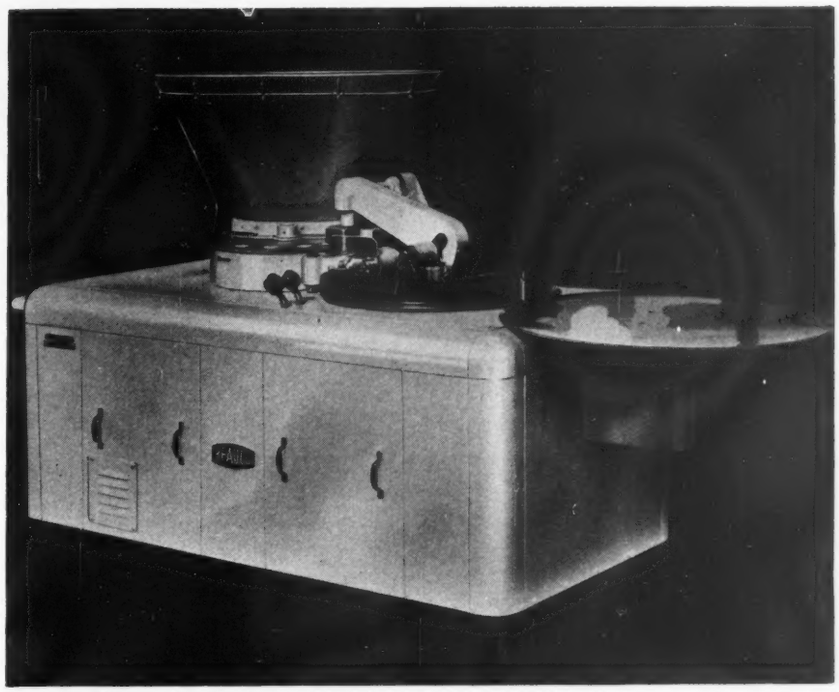
REVIEW OF FOOD PROCESSING EQUIPMENT, ACCESSORIES, AND SUPPLIES

Roll Divider and Rounder

READ MACHINERY CO., INC., York, Pa., is making a high speed automatic continuous feed vacuum roll divider and rounder. This device embodies vacuum in the scaling of the dough balls in order to avoid any breakdown of dough and yeast development. It is claimed that the result is the production of high quality rolls of improved flavor, uniform cell and grain structure, more uniform crust and having longer life. It is also claimed that with this divider it is not necessary to use special dough formulas and that make-up schedules can be continued unchanged.

This machine comes in hopper capacities from 75 to 400 lb., scaling range from ¾ oz. to 4 oz. and variable speeds from 70 to 210 dough balls per minute. The dimensions are 60 in. long by 27 in. wide by 60 in. high to top of hopper.

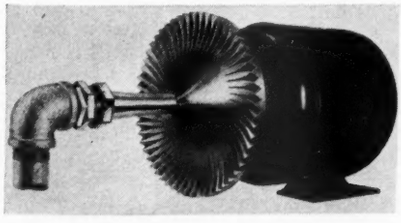
The machine is electrically operated and all mechanism is fully inclosed in an enameled steel frame for easy cleaning.



High speed automatic continuous feed vacuum roll divider and rounder

Dryer Spray Wheel

FOR USE in the drying of milk and other food products, D. J. Murray Mfg. Co., Wausau, Wis., has developed the spray wheel shown in the illustration. In use, the spray wheel is usually built into other equipment. The wheel shown is attached to a splash-proof, totally enclosed motor. The wheel is of one-piece construction, made of metal suitable to any given plant conditions. It is fully machined and employs no separate pins or parts that might break during operation. The wheel is constructed for self-cleaning, is said not to clog and to furnish a steady, dependable and uniform spray under any pressure.



Spray wheel for use in food dryers

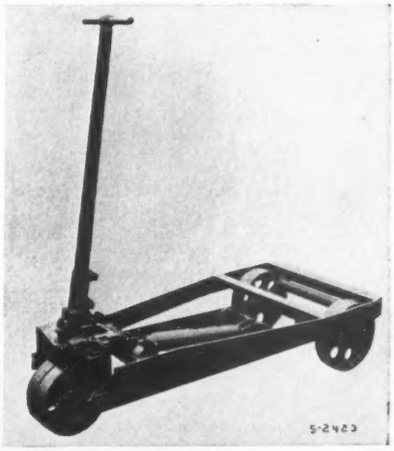
Commercial Refrigeration Unit

A NEW condensing unit for commercial refrigeration is being marketed by Carrier Corp., Syracuse, N. Y. This unit is designed for installations where space requirements are an important consideration.

This compressor unit is supplied in ⅓ and ¼ hp. sizes, equipped with Carrier vapor-cushion valve for quiet operation. It is designed for use in beverage coolers, reach-in refrigerators, display cases, frozen food cabinets, ice cream hardening and dispensing cabinets and similar installations.

Corrosion Resistant Lift Truck

TO MEET the severe corrosion problems encountered in such food industries as meat packing and pickle making, Yale & Towne Mfg. Co., 4530 Tacony St., Philadelphia, Pa., has developed a special hand lift truck. This truck is the "Model D, Single Stroke Lift Truck." It employs special heavy construction, with stainless steel parts where needed to resist corrosion. At small extra cost, it is claimed that this special truck



Corrosion resistant hand lift truck

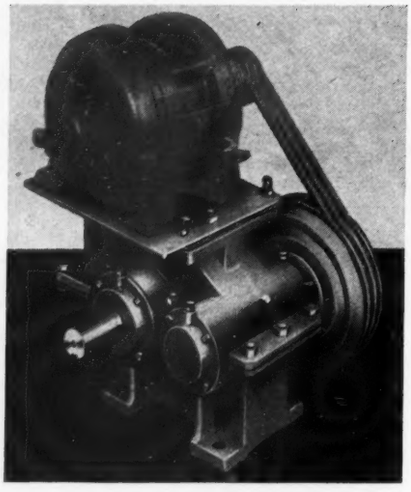
will give double the length of service to be expected from the ordinary design.

Variable Speed Reducer

STEPHENS-ADAMSON MFG. Co., Aurora, Ill., has a line of constant speed reducers which is called the "Saco Line." These reducers are designed for use with any standard full-speed motor to give required output speed. The motor support is adjustable for V-belt drive, permitting sheaves to be replaced easily when changes are required in output speed. Also, the shaft support construction of these reducers permits heavy overhung load. As designed, the output speed range of these reducers varies from 13.2 r.p.m. to 172 r.p.m. A mechanical efficiency is claimed for this new design running from 89 to 93 per cent, obtained through the use of precision ball bearing mountings on the shaft and precision cut helical steel gears operating in an oil bath.

Bacteriological Laboratory Unit

CREAMERY PACKAGE MFG. Co., 1243 W. Washington St., Chicago, Ill., has developed the "CP Milkontrol" laboratory unit for bacteriological control work in dairies and other food plants. This unit combines hot plates, dry air sterilizer, autoclave and incubator in a compact and convenient arrangement. The stainless steel cabinet is 5 ft. 11 in. by 2 ft. 2½ in. Each part of the unit has an individual electrical heating element. The autoclave generates its own steam by means of an electrical strip heater.

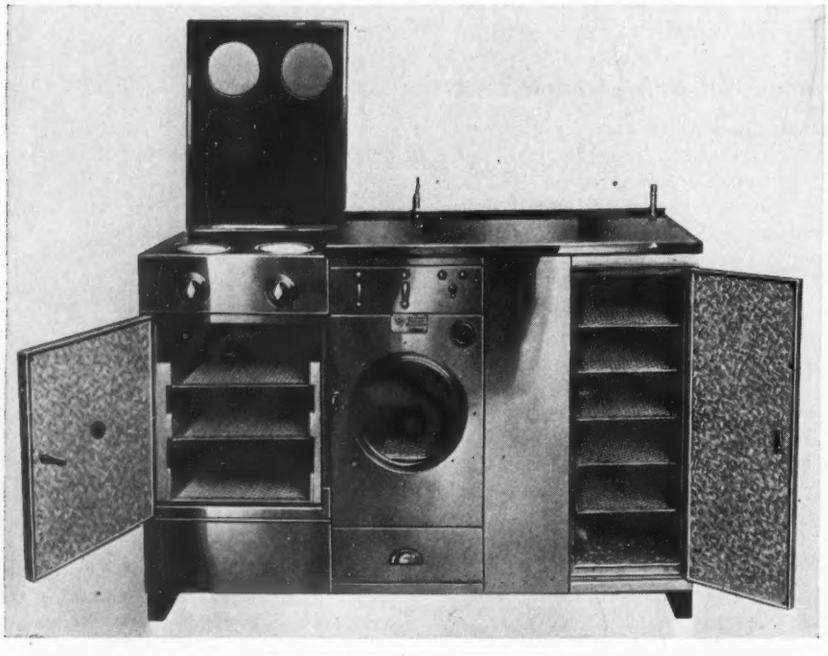


Variable Speed Reducer

Crusher and Grinder

PRATER PULVERIZER Co., 1829 South 55 Ave., Chicago, Ill., is making a heavy duty combination crusher and grinder. This machine employs the company's patented gradual reduction system. On entering, materials are first crushed by short hammers placed close to the shaft. Each succeeding row of hammers is longer, delivering progressively harder grinding blows. The cylinder, carrying the hammers, is in the form of a cone when in rotation.

Unusual economy in power consumption and uniformity in sizing are claimed for this grinder.



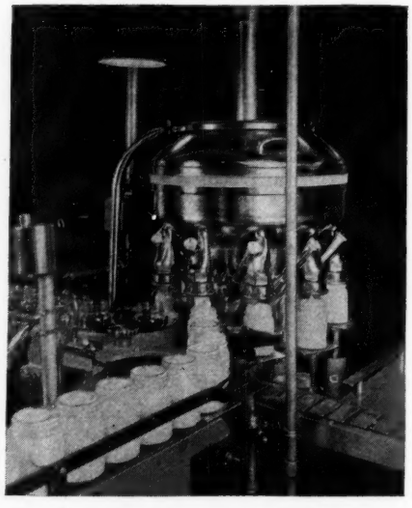
Bacteriological laboratory unit

Automatic pH Instruments

COLEMAN ELECTRIC Co., INC., 310 Madison St., Maywood, Ill., has brought out a line of instruments for automatic pH recording and control. These new instruments are claimed to be of proved accuracy and practicability, as they make use of no new or experimental electronic circuits. The purpose of the manufacturers has been to combine the best practice in automatic recorders with the best practice in electronic amplifiers, to produce a compact, accurate and efficient assembly of units. The instruments are said to be sensitive to approximately 0.02 pH and accurate to 0.05 pH.

Vacuum Filler for Semi-Solids

MOJONNIER BROS. Co., 4601 W. Ohio St., Chicago, Ill., have developed a vacuum filler for filling products such as mayonnaise, salad dressings, sandwich spreads and other viscous products of similar consistency. This machine is said to fill any type of container, including square mason jars, round or fluted jars and other special shapes. Its capacity is for containers from 4 oz. to 1 qt. Speed of the smaller model is 80 pt. to 45 qt. per minute, while the larger model has a capacity up to 120 qt. per minute.



Vacuum filler for semi-solids

Paper Shredder

KRAVEN MACHINERY CORP., New York City, are distributing the "Shred-Master," a machine for converting waste paper into shredded paper for packaging purposes. A special feature of this new shredder is that it automatically interlaces and mixes the paper strands so that the material hangs together in use and has a light structure reducing the shipping weight.

Just off the Press

BOOKLETS • LITERATURE • BULLETINS

Food Plant Equipment

CLEANING EQUIPMENT — Heavy duty portable vacuum cleaners for industrial use are described in an 8-page illustrated Bulletin, "No. A-303," by United States Hoffman Machinery Corp., Air Appliance Division, 105 Fourth Ave., New York, N. Y.

CLEANING AND STERILIZING EQUIPMENT—Various cleaning and sterilizing methods for canneries and food plants using Oakite materials are described in "18 Case Histories" by Oakite Products, Inc., 22 Thames St., New York, N. Y.

CONVEYOR SYSTEM—"The Johns Conveyor," a moving pipe line for handling granular materials and liquids, is discussed in a recent 8-page booklet by Johns Conveyor Division, The Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland, Ohio.

LOCKER STORAGE — The Carrier Corp., Syracuse, N. Y., has issued "On the Hoof and On the Table" presenting information on locker storage systems, refrigerating machines for locker plants, and schedule of charges.

MATERIALS HANDLING TRUCKS—Various warehouse loading devices with hand and foot controlled internal brakes are described and illustrated in a folder issued by Smith Devices, 2245 N. 12th St., Philadelphia, Pa.

Plant Accessories and Supplies

CASTINGS—The International Nickel Co., 67 Wall St., New York, N. Y., has issued a booklet describing corrosion resistant Monel and nickel castings.

COMBUSTION CONTROL—The application of air-operation combustion control is described in a 32-page illustrated loose-leaf Bulletin, No. 102-B, by Bailey Meter Co., Cleveland, Ohio.

GAS ENGINE—The PVG engine built for continuous full load operation at a speed of 400 r.p.m. is described by Ingersoll-Rand Co., 11 Broadway, New York, N. Y., in a recent bulletin.

HEAT ECONOMIZERS — A leaflet issued for addition to Bulletin No. 35-76 of American District Steam Co., North Tonawanda, N. Y., illustrates two heat economizer installations for reclaiming heat from hot condensate for water heating or processing.

INDUSTRIAL LIGHTING EQUIPMENT —"Sperti" combination mercury vapor and incandescent lights for use in color corrected lighting is discussed in a 4-page illustrated folder of Science Laboratories, Inc., 424 E. 4th St., Cincinnati, Ohio.

SURFACE COATINGS—Amercoat Sales Agency, 5905 Pacific Blvd., Huntington Park, Calif., has issued a 16-page illustrated bulletin describing uses and application procedure for cold-applied corrosion resisting coatings of plastic, for use on metal, wood and concrete, manufactured by American Concrete & Steel Pipe Co., Southgate, Calif.

UNIT HEATER—Buffalo Forge Co., Buffalo, N. Y., has recently issued Bulletin No. 3137 describing Model "C" Breezo-Fin unit heater for industrial installation.

VARIABLE SPEED TRANSMISSION—The "Vari-Pitch Speed Changer" for variable speed transmission is discussed in Bulletin 1266 by Allis-Chalmers Mfg. Co., 1126 S. 70th St., Milwaukee, Wis.

WATER SOFTENERS—"Infilco" hot-flow softeners for boiler feed water are discussed and illustrated in Catalog 1850 published by International Filter Co., 59 E. Van Buren St., Chicago, Ill.

Packaging

PACKAGING EQUIPMENT—Model F-9 and other machines for wrapping packages in lots from 2 to 24 or more are described in Bulletin No. 352 by Packaging Machinery Corp., Springfield, Mass.

Trucks, Tractors, Accessories

CLEANING OPERATIONS — Cleaning methods for truck fleets are discussed in a 35-page booklet issued by Oakite Products, Inc., 22 Thames St., New York, N. Y.

STORAGE BATTERIES—More than 30 types of "Exide" batteries are illustrated, together with many storage battery applications, in the 50th anniversary publication of The Electric Storage Battery Co., Allegheny Ave. and 19th St., Philadelphia, Pa.

TRUCK TIRE—An Operators Handbook on truck, bus, farm and industrial tractor tires for automotive equipment manufactured by The B. F. Goodrich Co., Akron, Ohio, contains 66 pages of statistical data on specifications, load analysis, costs and load ratios and inflation pressures.

Laboratory Equipment

BALANCES AND WEIGHTS—Pfaltz & Bauer, Inc., Empire State Bldg., New York, N. Y., has published a 56-page illustrated catalog and price list dealing with various types of analytical balances, weights and scales for laboratory use.

LABORATORY EQUIPMENT — The United States Stoneware Co., Akron, Ohio, has issued Bulletin No. 503 dealing with corrosion resistant sinks, pipes and fittings for same made of "U. S. Standard" chemical stoneware for laboratory service.

Materials of Construction

CORROSION INHIBITORS—"Chromium Chemicals as Corrosion Inhibitors" is the title of an 8-page bulletin summarizing the use of chromium chemicals for preventing corrosion, issued by Mutual Chemical Co. of America, 270 Madison Ave., New York, N. Y.

INSULATION—Corkboard insulation for cold storage rooms and cork covering for insulating pipelines carrying cold liquids are discussed in two bulletins published by Armstrong Cork Products Co., Lancaster, Pa.

MATERIALS OF CONSTRUCTION—Application of stainless and heat resisting steels to the process industries is discussed in an 8-page Bulletin, Adv. 313, issued by Republic Steel Corp., Advertising Division, Cleveland, Ohio.

The Food Industry News

GENERAL NEWS, BUSINESS TRENDS, MEN, JOBS AND COMPANIES • MARCH, 1939

24 Foods Are Exempted From Label Regulation

Twenty-four food products will be exempt for two years from the requirement that the ingredients be stated on the labels. This is in accordance with a regulation issued on Feb. 15 by Secretary Wallace under the Federal Food, Drug and Cosmetic Act. The purpose of the exemption period is to give time for the formulation of definitions and standards of purity for those products.

The exempted foods are as follows:

White bread, whole-wheat bread, raisin bread.

Evaporated milk, sweetened condensed milk, malted milk.

Unmixed, immature canned vegetables, properly prepared and with water not in excess of the amount necessary for proper processing, with or without added salt or sugar or both, but with no other added substance.

Unmixed canned fruits, properly prepared and in sugar solution of not less than 20 deg., Brix not in excess of the amount necessary for proper processing, but with no other added substance.

Canned oysters, canned clams, canned shrimp (dry and wet pack), canned fish roe.

Sauerkraut, olives in brine.

Cheeses, oleomargarine, mayonnaise dressing.

Fruit preserves.

Sweet chocolate, sweet milk chocolate.

Lemon extract, orange extract, vanilla extract.

Processors have been informed that the exemption for any of these foods may be revoked at any time upon publication of notice of revocation in the *Federal Register.*

Work on Food Standards Continues in Washington

Public hearings to investigate proposed standards of identity for various milk and cheese products are expected to be called before long by Secretary Wallace. These standards were agreed upon by the Food Standards Committee at meetings held in Washington early in January. They are now being prepared for presentation to the Secretary who is to issue a formal announcement of hearing as required by the Federal Food, Drug and Cosmetic Act. The products involved are evaporated milk, condensed milk, malted milk, and dried skim milk, cream, cheddar and process cheddar cheese.

RE-ELECTED BY BAKERS

L. J. Schumaker, president of American Cone & Pretzel Co., Philadelphia, has again been chosen to head up American Bakers Association and American Institute of Baking.

John McDill, attorney attached to the office of the Solicitor of the Department, and who conducted the first formal food standards hearings, has been at work on standards for tomatoes, tomato products, and eggs and egg products.

The proposed standards on eggs and egg products drew out several clashing opinions. Several features in the proposed draft as to standards of identity were opposed. Joseph Callaway, Jr., senior chemist for the F&DA and secretary of the Food Standards Committee, Harry A. Leper, senior chemist of the F&DA, and others defended the proposals. Principal points of difference arose over use of the word "sound" and the word "homogeneous." Arthur L. Israel, Chicago, speaking for National Egg Products Association, suggested "edible," in place of "sound."

Pea Canners Get Loan

American pea canners now have available a loan of $7,500,000. Obtained through the Reconstruction Finance Commission by Canned Pea Marketing Cooperatives, the loan will be used to pay growers and to assist in the orderly marketing of the abnormal 1938 crop. A separate organization, the Canned Food Finance Corp., has been set up to service the loan and to act as intermediary between R.F.C. and the individual borrowing canners.

President Asks Congress To Remove Color Joker

President Roosevelt has taken a hand in the tangled situation which threatens to delay the effective administration of the Federal Food, Drug and Cosmetic Law. He has sent to Congress a request for the immediate appropriation of $30,000 so that certification of coal tar colors may begin at once.

It is expected that the item, which is to be included in the deficiency appropriation bill, will permit the Food and Drug Administration to certify colors prior to the effective date of the new law, June 25. This would end fears felt by the trade over the discovery of an apparent "joker" in the law. The law forbids interstate commerce in foods, drugs, and cosmetics containing coal tar colors not certified by the Department. At the same time, it is held, the law also forbids certification until June 25.

In order to clear this uncertainty, the Budget Bureau has drafted a statement to go with the proposed appropriation which would authorize the Department to conduct certification work when the funds are available. When the work is in operation the certification will be paid for by fees from color manufacturers.

ABA Governors Meet; Standardize Pan Sizes

Representing the largest membership and greatest number of ovens in the history of the Association, the board of governors of American Bakers' Association held its annual meeting at Chicago, Jan. 26–27.

Reports on a survey of bakery business activity throughout the nation showed that bakery sales were generally off except in some parts of the South and Iowa and Pennsylvania.

Increased number of "stale" sales outlets and oversupply of relief flour in some sections of the country were re-

garded as subjects for careful study and deliberate action. Wage-hour legislation, processing taxes, Federal Surplus Commodities Corp. activities, reuse of flour bags, Federal Food, Drug, and Cosmetic Act label requirements, public relations program, industry statistics, American Institute of Baking research activities, standardization of baking pan sizes, new cake course at the Institute, and the sound financial condition of the Association were subjects dealt with during the two-day meeting.

A resolution was passed recommending strongly that the standard pan lengths adopted as maximum for the various loaf weights throughout the industry be:

9	in.	for *baked*	loaves	weighing	12 oz.
10½	in.	for *baked*	loaves	weighing	16 oz.
12	in.	for *baked*	loaves	weighing	20 oz.
13½	in.	for *baked*	loaves	weighing	24 oz.

L. J. Schumaker, American Cone & Pretzel Co., Philadelphia, was reelected to another term as chairman and president of ABA. Other officers also were retained, including G. R. Williams, Williams Bakery, Scranton, Pa., first vice-president; W. A. Hefler, White House Bakeries, Inc., Boston, second vice-president; M. Lee Marshall, Continental Baking Co., New York, treasurer; and Tom Smith, secretary.

The 1939 annual bakers' meeting and American Bakers' Association convention will be held Oct. 15–19 at the Hotel Commodore, New York.

AIB To Promote Bread By National Advertising

Beginning this month, a campaign of advertising to promote bread will be conducted under the supervision of American Institute of Baking. Full-page and double-page advertisements on the value of bread in normal and reducing diets will be used. The ads are scheduled to run in *Good Housekeeping, McCall's Magazine, Saturday Evening Post* and *Life*. Cooperative action on the part of Standard Brands, Inc., is making possible this project on the part of the Institute for the remainder of the year.

Through independent action by the Institute, advertisements in the *Journal of the American Medical Association, Hygeia* and other previously used media will continue. A $70,000 budget for 1939 was approved for that promotional activity.

Last year's officers of the AIB were reelected at the meeting of its board of directors at Chicago on Jan. 25. L. J. Schumaker, American Cone & Pretzel Co., Philadelphia, is chairman and president; Grover C. Patton, Purity Baking Co., Inc., Decatur, Ill., vice-chairman; M. Lee Marshall, Continental Baking Co., New York, treasurer; Tom Smith, secretary.

Macaroni Makers Meet; Vote More of Same

Merchandising problems, advertising campaigns, trade practices, and results of technical studies carried on by the research laboratory were discussed at the meeting of National Macaroni Manufacturers Assn. in Chicago, Jan. 22–23.

Following the conference, the macaroni makers voted to continue the program initiated more than a year ago. Under the leadership of paid executive president, Lester S. Dame, the establishment of cooperative relationship between the macaroni industry and the federal and state food law enforcing agencies is to continue. Greater coordination of regional activities is being promoted, as is also industry education on merchandising, trade practices and customer relations.

A set of trade practice rules has been worked out during the past year and adopted both by the industry and the Federal Trade Commission.

The industry's annual summer convention is to be held at Park Central Hotel, New York, N. Y., June 26–27.

Cake Bakers Consider Merchandising Problems

As a climax to its first two-weeks course on cake baking, the Wholesale Cake Bakers' Division of the American Bakers' Association met in its second annual conference in Chicago on Jan. 23 and 24. Whereas the short course at the American Institute of Baking centered its attention upon the raw materials used, operations employed and art practiced in making cakes, the conference devoted the major portion of its time to merchandising problems of the cake industry.

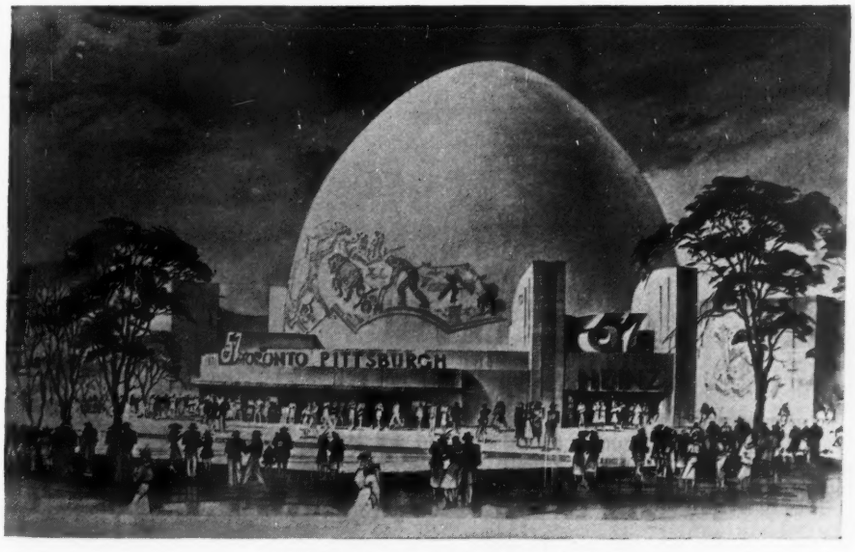
From Mrs. Leone Rutledge Carroll, Director of Jewell Home Makers Institute, the conference learned that the customers of the wholesale cake baker are still skeptical about the raw materials he uses, that an educational program would be helpful, and that cakes in the various price ranges should be displayed separately to attract the attention of buyers in the different income groups and also in a manner which would prevent their being handled by the prospective purchasers.

A round table discussion on "Packaged Cake As the Customers Receive It" by a group of six women prominent in organized home maker activities brought out a wide diversity of opinions and convictions concerning sizes and varieties of cakes a baker should try to market as well as how they should be packaged. Ideas on packaging ranged from no packaging at all to glass containers upon which a deposit would be paid as for milk bottles and pie plates.

"Consumer research," R. B. Barton of B. B. D. & O. told the conference, "supplies controls by means of which we can plan and forecast results in advance." He illustrated his talk with charts showing the basic elements of the marketing structure, major marketing factors and the number of possible consumers in the various economic and vocational classifications.

Nutritionally speaking, Dr. James A. Tobey, American Institute of Baking, favorably compared cake with other foods recognized as staple items in a good dietary. It contains a variety of good foods as ingredients, such as eggs, butter, milk, sugar and minerals, as well as flour and water.

To encourage improvement in production or reduction in costs, John Thies, Quality Bakers of America,



FAIR HOME FOR THE "57"

"House of Heinz", one of the New York World's Fair exhibits, will be along suggested "perisphere and trylon" lines. The dome, flanked by 19 columns, towers 90 feet and covers 20,000 sq. ft. of floor space. Fluorescent tubes will flood the interior of the dome with light.

recommended the adoption of some kind of an incentive plan or program for men in the production department.

A committee on policy in relation to the drawing up of standards and definitions for cakes to comply with the labeling provisions of the new Food, Drug and Cosmetic Act was appointed with Ralph Ward, Drake Bakeries, Inc., Brooklyn, N. Y., as chairman.

The bakers elected as officers for the coming year, A. W. Lantz, Lantz Bros. Baking Co., St. Louis, Mo., chairman; Ellis Baum, Continental Baking Co., New York, N. Y., vice-chairman.

Swift Prepares New Tool For Industrial Relations

Something different in the way of industrial relations has been done by Swift & Co., Chicago. The company has gotten out a special report to employees which presents in layman language the history of the company's financial operations during the last fiscal year and outlines its employee-benefit activities.

Prepared in the form of an attractively illustrated pamphlet, the report is introduced by a message to employees from the president of the company. Then follow brief but lucid discussions of volume of business and earnings of the company, employment and the factors affecting it, accident prevention and what has been accomplished by it, group life insurance, vacations, long service and pensions, savings effected by employee suggestions, improvements made in products, new plants and the factors which make a business prosperous.

The report gives a table of income and expenses, wages and earnings, and a balance sheet of Swift and associated companies. Pictures of employees who have had long service with the company, illustrations of new plants and typical plant and laboratory scenes decorate the report. In the financial statements, the language of the accountant is replaced by every-day words which clearly explain the meaning of the various items.

This report has been distributed to 60,000 employees.

Program for Packaging Conference Announced

Practically every major phase of packaging will come in for discussion by experts at the Conference on Packaging, Packing and Shipping to be held currently with the Packaging Exposition at the Hotel Astor, New York, March 7 to 10. And the exposition itself will be the largest showing of machinery, equipment, supplies and materials for packaging, packing and shipping ever held in this country. The products of some 75 companies will be on display, and as a special feature of the show, all packages entered in competition for the Irwin D. Wolf Awards will be exhibited.

The following is the program for the conference:

Unit Packaging Sessions

MARCH 7

10—Packaging Fallacies. Harry J. Higdon, Phoenix Metal Cap Co.
11—Packaging and Merchandising of Frozen Foods. Harry Carlton, University of Tennessee.
1—The Problem of Training Package Designers. Irwin D. Wolf, Kaufmann Department Stores, Inc.
2:30—Packaging and the New Pure Food, Drug and Cosmetic Law. A symposium.

MARCH 8

9:30—Lamination—Its Development and Progress. Alan S. Cole, *Modern Packaging*.
11:30—Progress in Informative Labeling. One speaker will present the consumer's point of view, another the merchant's and a third the manufacturer's.
2—Packaging Clinic.

Packaging and Shipping Sessions

MARCH 8

9:30—Recent Developments in Wooden Shipping Containers. C. D. Hudson, National Wooden Box Association.
Work Simplification Applied to the Shipping Department. Clifton H. Cox, Merck & Co.
11:30—Advantages and Disadvantages of Packing Material Specifications. R. L. Beach, General Electric Co.
2—Packing and Shipping for Export. A symposium.

MARCH 9

9:30—Progress in Packaging for Shipping. Tom L. Lussen, The B. F. Goodrich Co.
10:30—Reducing Packaging Costs. P. C. LaPierre, Anaconda Copper Mining Co.
11:30—New Container Testing Devices. Don L. Quinn, Don L. Quinn Co.
2—Shipping Container Clinic. The products of Underwood Elliott Fisher Co.

Packaging Machinery Sessions

MARCH 7

9:30—What's New in Packaging Machinery. Francis P. Chilson, Industrial Consultant.
10:30—The Glass Industry Charts a New Course in Design. Dr. J. H. Toulouse, Owens-Illinois Glass Co.
11:30—The Human Equation in Package Production. Palmer J. Lathrop, Bristol-Meyers Co.
2—Questions and Answers Session.

Temperature Measurement Symposium Will Be Held

A symposium on "Temperature and Its Measurement in Science and Industry" will be held under the auspices of the American Institute of Physics, probably next fall, the dates to be announced later. Consistent with the title, the symposium will broadly cover many fields, its primary purposes, according to present plans, being to: (1) coordinate the treatment of the subject in the sciences and branches of engineering, (2) review principles and bring up to date the record of recent work, (3) accumulate contributions for a comprehensive text, to be published as soon as possible after the symposium is held, (4) reveal the subject as an important branch of physics and (5) supply schools with the information required for the improvement of curricula.

Those who are interested in taking part in this symposium should communicate with the Institute at an early date, giving information regarding their field of work and the subject of the contribution they wish to make. The institute is located at 175 Fifth Ave., New York, N. Y.

CONVENTIONS

MARCH

3–5—Canners' League of California, Del Monte Hotel, Del Monte, Calif.
7–10—Ninth Packing Exposition and Conference, sponsored by American Management Association, Hotel Astor, New York.
13–16—American Society of Bakery Engineers, Edgewater Beach Hotel, Chicago.

APRIL

25–27—Pacific Northwest Bakers Conferference, Multnomah Hotel, Portland, Oregon.

States Seek Conformity With Federal Food Law

Bills revising the entire state food law have been introduced in several of the 44 state legislatures convening this year. Measures intended to revamp the existing state laws in line with the new Federal Food, Drug and Cosmetic Act have been submitted to the law makers in California, New Jersey and Texas. In Maryland food and drug officials have drafted a bill to bring state laws into harmony with the federal act.

At the request of Edwin G. Woodward, state dairy and food commissioner, a bill seeking to regulate the manufacture of foods, drugs and cosmetics in the manner prescribed by the new federal act was introduced in the Connecticut senate.

A public hearing is to be held in the state of Washington in connection with a new food, drug and cosmetic act patterned after the national law. A measure on the same subject was defeated in the 1937 legislature.

As the result of a public hearing conducted in regard to Utah's proposed new food act, a state senate agricultural committee gave the measure an unfavorable committee report. One of the objections raised by affected parties was that the bill did not follow strictly the federal law and that there were harassing provisions not in the federal act.

In Arkansas, a house committee reported out, without recommendation, a proposed uniform state food, drug and cosmetic act after opponents to the bill declared that the regulations would prove harmful to canners and distributors.

A New Mexico senate bill would regulate manufacture and sale of food, drugs and cosmetics, placing them under the jurisdiction of the state health department. Submitted to the Tennessee house is a bill that would govern manufacture, transportation, receipt in

commerce, shipment, advertising and sale of food, drugs and cosmetics.

A revision of the Indiana food and drug act "to better control the production, manufacture, handling and sale of foods and drugs as well as cosmetics and therapeutic devices" was urged by Gov. M. Clifford Townsend in his address to the state legislature.

Other than considerations to revise the entire state laws, most of the legislation introduced this year in the greater part of the states dealt with laws affecting the dairy industry. Bills under discussion range from the setting of new standards for milk and ice cream to a complete revision of the dairy laws and administration. While Florida and Georgia went on record as being against milk control measures, most states were considering the strengthening or amending of their milk control acts.

There were comparatively few measures providing for new taxes and licensing fees. Those submitted dealt mainly with beer and liquor taxes, with increasing oleomargarine fees and taxes, and with imposing fees on butter and ice cream substitutes. In retaliation for the attempt of northern states to tax products made from cottonseed and its oil, there were submitted in the southern legislatures such proposals as that of Arkansas seeking a 25 per cent tax on all agricultural products shipped into the state from Iowa, Minnesota, Washington and Wisconsin.

Bills setting up a consumer's bureau have been introduced in the New York and California legislatures. The New York bill would levy a fee of $25 annually for each manufactured product in order to finance such a bureau.

A Rhode Island bill possibly calls for the heaviest fine provided in any bill submitted. A $5,000 fine, a year's jail sentence or both is imposed on any person selling impure olive oil in a container marked "Pure Olive Oil".

Canned Food Stocks High

As reported by the Department of Commerce on Feb. 4, 1938, the stocks of canned foods held by canners in the United States on Jan. 1, 1939, were relatively high. Peas in 1939, at 16,372,154 cases, compared with 11,907,175 cases a year previous. Corn was 17,561,019 cases, compared with 13,251,721 cases on Jan. 1, 1938. The following table summarizes the report:

Product	In Canners' Hands Cases	In Distributors' Hands Cases
Peas	16,372,154	1,298,902
Corn	17,561,019	1,424,013
Tomatoes* ...	10,119,186	994,404
Beans**	5,384,126	675,658
Peaches	3,494,536	804,484
Pears	2,109,815	369,424
Salmon	2,769,415	274,695

* Excludes California, for which there is no data.
** Green and wax beans.

Commodity Prices Again Show Little Movement

For another month, commodity prices, including prices for foods, have failed to show any marked trends. Battered between the opposing forces of bearish reports on war probabilities and bullish forecasts of better domestic spring business, food commodity prices have been practically unchanged since the Czechoslovakian flurry last fall.

For the month from Jan. 7 to Feb. 4, the U.S. Department of Labor's general wholesale commodity index moved down from 77.0 to 76.6. In the same period the farm products index moved from 67.6 to 67.1 and the food index from 72.6 to 71.0. In contrast, from Jan. 14 to Feb. 11 the *New York Journal of Commerce's* weekly commodity price index moved up from 74.9 to 75.0, while the same publication's food index, moved up from 65.8 to 66.7.

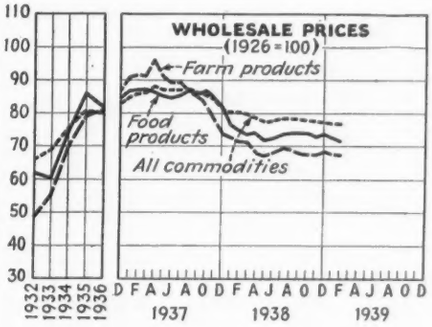
This contrary tendency of the two indexes, coupled with the small changes recorded, indicates rather definitely that price levels are marking time. Should the European situation calm down, the stage seems to be set for at least a small price recovery during the next few months. On the other hand, the price structure is probably at a low enough level to withstand bad news from Europe without any violent acrobatics.

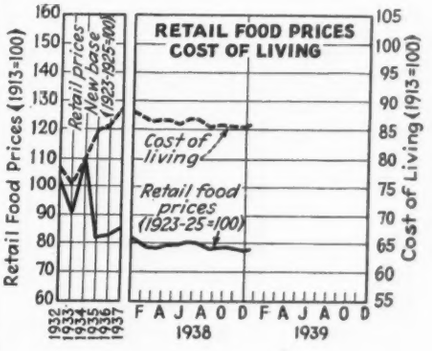
Edible Oils Unsettled

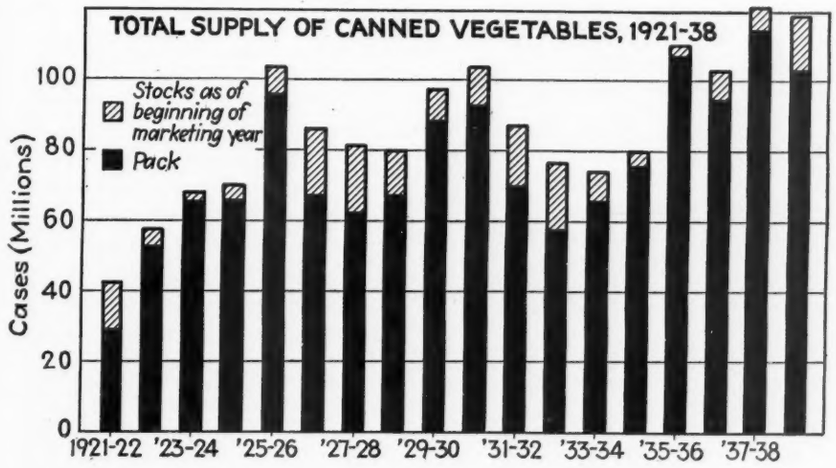
Lard production and domestic lard use have both been increasing in recent months. However, the export market for lard is not showing much increase and the potential supply is likely to increase rapidly as the number of hogs continues to rise toward the 80,000,000 level of pre-drought years.

Another factor is the rapid increase in both production and consumption of soy bean oil. The output of this product is now increasing at a rate of around 30 per cent per year and it is becoming an important factor in the edible oil market.

These facts are interesting in the light of recent reports of cottonseed oil consumption. The report for January, 1939, issued on Feb. 14, showed consumption in that month to have been 229,666 bbl. This compares with 209,-






TOTAL SUPPLY OF CANNED VEGETABLES, 1921-38
Stocks as of beginning of marketing year
Pack
Cases (Millions)
1921-22 '23-24 '25-26 '27-28 '29-30 '31-32 '33-34 '35-36 '37-38

Data for the Curves

In preparing the curves shown on this and the succeeding page of FOOD INDUSTRIES, data were obtained from the following sources: Prices received by farmers, U. S. Department of Agriculture; employment, payrolls, wholesale and retail prices, U. S. Department of Labor; cost of living, National Industrial Conference Board; commodity price index, *N. Y. Journal of Commerce;* business activity index, *Business Week;* canned foods, Bureau of Agricultural Economics, U. S. Department of Agriculture.

706 bbl. in December, 1938, and 378,092 bbl. in January, 1938. It also compares with consumption ranging above 400,000 bbl. in several months of 1938.

It would seem from these figures that changes in the supply levels of various competing oils are causing adjustments in consumption levels. In any case, edible oil prices have had a downward tendency in the past three months, and the oil price situation is, in general, unsettled.

Milk Led Farm Products As Cash Producer in '38

According to figures released by the Milk Industry Foundation, milk produced a cash income of $1,430,000,000 for farmers in 1938. This was more than the income produced by any other single farm product, but was off 6.5 per cent from the 1937 yield of $1,530,000,000. All farm cash income in 1938 was $7,150,000,000.

This drop in dollar yield was in the face of an increase of between 4 and 5 per cent in total production and was the result of lower sales totals.

Less Fat and Oil Imported

Figures on imports of fats and oils into the United States in 1938 show a total for all vegetable (including oil equivalent of oil seeds), animal and fish oils of 1,901,000,000 lb. This compares to imports of 2,829,000,000 lb. in 1937 and 2,337,000,000 lb. in 1936.

This decrease in fats and oils imports is directly traceable to the more ample domestic supply of animal fats and to the greatly increased production of cottonseed oil and soybean oil.

Consumption of all fats and oils in the United States, including butter, has increased in the last 25 years from 5,000,000,000 lb. to 9,000,000,000 annually.

Construction News

	Pending (thousands)	Awarded Feb. (thousands)	Total Awarded 1939 (thousands)
Bakery	.....	$44	$154
Beverages	$870	300	698
Canning and Preserving	40	.....	80
Confectionery	45	.....	.....
Grain Mill Products	2,040	40	120
Ice Manufactured	130	80	80
Meats and Meat Products	1,260	.....	40
Milk Products	40	40	120
Miscellaneous	160	80	154
	$4,585	$584	$1,446

INDICATORS

PIG CROP in 1939, combined spring and fall, is expected by the Bureau of Agricultural Economics to equal or exceed 80,000,000 head, equaling the five-year pre-drought average of 1929-1933.

OLEOMARGARINE SALES in 1938, as indicated by sales of revenue stamps, totaled 382,732,021 lb., a decrease of 3.8 per cent below sales of 397,469,066 lb. made in 1937.

BUTTER PRODUCTION in 1938, as reported by the Bureau of Agricultural Economics, was 1,788,268,000 lb., an increase of 10 per cent over 1937 production and of 8 per cent over the 1929-1936 average.

EVAPORATED AND CONDENSED MILK PRODUCTION (case goods) in 1938 totaled 2,134,534,000 lb., compared to 1,931,228,000 lb. in 1937.

CHEESE PRODUCTION in the United States in 1938 was 548,131,000 lb., an 11 per cent increase over 1937 production, and up 33 per cent above the 1929-1936 average.

SPINACH canned in 1938 totaled 2,401,041 cases, compared to a pack of 4,952,166 cases in 1937, according to the National Canners Association.

PUMPKIN AND SQUASH canned in 1938 amounted to 1,177,244 cases, compared to 1,507,708 cases packed in 1937, as reported by the National Canners Association.

FRUITS, frozen, in storage on Feb. 1, 1939, totaled 116,031,000 lb. This figure compares to 118,642,000 lb. on Feb. 1, 1938, and a 1934-1938 average for the date of 74,285,000 lb.

VEGETABLES, frozen, in storage on Feb. 1, 1939, amounted to 61,986,000 lb., compared to 28,640,000 lb. a year previous.

BUTTER, creamery, in storage on Feb. 1, 1939, totaled 111,547,000 lb., compared to 31,211,000 lb. on Feb. 1, 1938, and a 1934-1938 average for Feb. 1 of 38,070,000 lb.

CHEESE, all kinds, in storage on Feb. 1, 1939, was 106,450,000 lb. This compared to 93,497,000 lb. on Feb. 1, 1938, and a 1934-1938 average for the date of 89,301,000 lb.

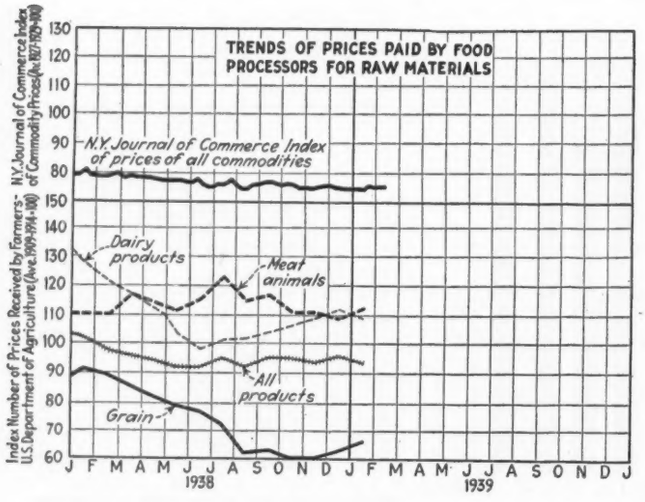
EGGS, case equivalent, in storage on Feb. 1, 1939, amounted to 1,581,000 cases, compared to 3,045,000 cases on Feb. 1, 1938, and 1,903,000 cases average for the date in the years 1934-1938.

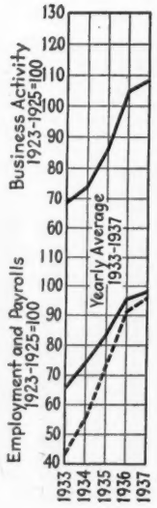
POULTRY, frozen, all kinds, in storage on Feb. 1, 1939, was 134,457,000 lb. This compared to 115,105,000 lb. a year before and an average of 127,940,000 for the same date in the years 1934-1938.

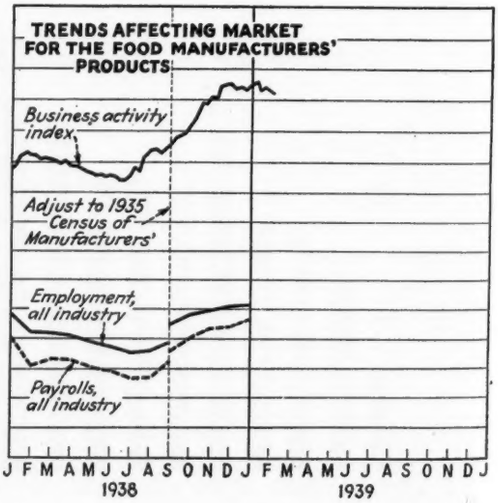
MEAT, all kinds, in cure and storage on Feb. 1, 1939, amounted to 656,974,000 lb., against 697,870,000 lb. a year previous and a 1934-1938 average for Feb. 1 of 833,985,000 lb.

LARD in storage, Feb. 1, 1939, was 132,140,000 lb. This compared to 99,318,000 lb. on Feb. 1, 1938, and to a 127,790,000 lb. average for the date in the years 1934-1938.

WEEKLY FOOD INDEX of Dun & Bradstreet, Inc., was $2.31 on Feb. 14, exactly the same as the figure reported for Jan. 10, five weeks before, but 5.3 per cent below the figure for the corresponding week of 1938.


TRENDS OF PRICES PAID BY FOOD PROCESSORS FOR RAW MATERIALS
N.Y. Journal of Commerce Index of prices of all commodities
Dairy products
Meat animals
All products
Grain
Index Number of Prices Received by Farmers, U.S. Department of Agriculture (Aug. 1909-July 1914=100)
N.Y. Journal of Commerce Index of Commodity Prices (Aug. 1927-July 1930=100)
J F M A M J J A S O N D J F M A M J J A S O N D J
1938
1939




TRENDS AFFECTING MARKET FOR THE FOOD MANUFACTURERS' PRODUCTS
Business activity index
Adjust to 1935 Census of Manufacturers'
Employment, all industry
Payrolls, all industry
J F M A M J J A S O N D J F M A M J J A S O N D J
1938
1939

Men, Jobs & Companies

INDUSTRY

Blue Valley Creamery Co., Chicago, has been purchased by Beatrice Creamery Co. of the same city. The latter took over the fourteen Blue Valley plants as of March 1. Blue Valley products will continue to be distributed under that name.

Burnham & Morrill Co., Portland, Me., will can Maine's newest seafood product, Gulf of Maine shrimp.

Canada Dry Ginger Ale, Inc., recently opened a distributing center at Scranton, Pa., and plans to build a modern bottling plant there.

Caroon Packing Corp., Fowler, Ind., suffered damage of $150,000 on Jan. 22 when its plant was destroyed by fire.

Coca-Cola Bottling Co., Inc., will construct a new $40,000 plant at South Glens Falls, N.Y., and will erect a modern plant at Albany, Ga.

Columbia Brewery will spend $150,000 to construct a new three-story building and to modernize its bottling department. This is in addition to a $150,000 improvement program now under way.

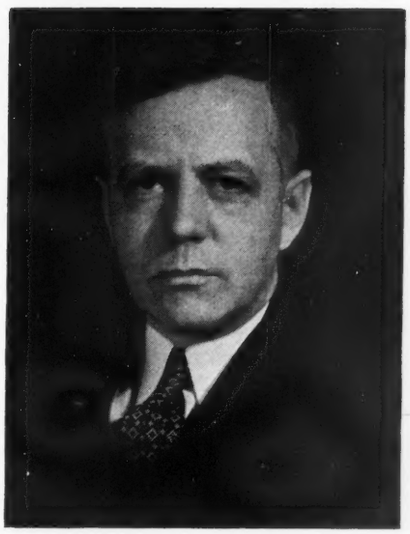
Columbia River Packers Association is building a new cold storage plant in Astoria, Ore. Storage facilities will be more than doubled and will permit packing of tuna from late summer until the next April. The firm is also installing new machinery for processing tuna and salmon at its Elmore, Ore., plant, and it will build a fish reduction plant near Warrenton, Ore. The total improvements will cost more than $75,000.

Continental Baking Co. will spend about $100,000 on improvements at Richmond, Va., including a two-story brick, concrete and steel addition to its existing plant.

Dairymen's League Cooperative Association, Inc., will erect a $75,000 plant at Auburn, N. Y.

Dixie Dairies, Inc., Macon, Ga., has acquired Gesslin Ice Cream Co., Dublin, Ga.

Fritch Milling Co., Bethlehem, Pa., suffered damage of more than $100,000 when its plant was destroyed by fire recently.



HOWARD C. GREER

An authority on distribution and cost accounting problems in the meat packing industry, he recently resigned from the Institute of American Meat Packers and joined Kingan & Co., Indianapolis, as vice-president. Mr. Greer had been director of the department of accounting and the department of marketing of the Institute.

H. J. Heinz Co. will spend $125,000 for additions and improvements to its plant at Leamington, Ont.

Inland Sugar Co. will open a liquid sugar refinery in Milwaukee. The company will utilize raw sugar from Cuba and the United States insular possessions. The company is headed by Edwin W. Colman, formerly of Rockford, Ill.

Kraft-Phenix Cheese Corp. has opened its new international headquarters at Chicago. The new building houses offices and manufacturing facilities for Chicago and middle western markets.

Lincoln (Neb.) Cooperative Milk Producers Association will build a $100,000 milk processing plant.

Minnesota Valley Canning Co., Le Seuer, Minn., recently obtained a loan of $600,000 to refund outstanding bonds and to provide additional working capital.

Omar Baking Co. has taken over the routes and customers' accounts of Hathaway Bakeries, Inc., in Milwaukee.

Pepsi-Cola Distributing Co. has been organized at Buffalo, N. Y. The firm will distribute beverages in the western New York area.

Pfeiffer Brewing Co., Detroit, has launched a $500,000 building expansion program to provide additional production facilities.

Rath Packing Co., Waterloo, Iowa, is installing an air-conditioning system in its office building. The company has also started construction of a five-story 40x50-ft. smokehouse and is erecting a $12,000 stock receiving building.

Stokely Brothers & Co., Indianapolis, has acquired complete control of Honor Brand Frosted Foods Corp., New York, and has made E. J. White president of the frozen food concern. Mr. White formerly was head of the White Davenport Co., frosted food brokers. Stokely obtained an option on all Honor Brand stock not owned by it.

Swift & Co. will erect a $300,000 soy bean oil mill in Des Moines, Iowa, to be finished by Nov. 1. The plant will use about 1,250,000 bu. of soy beans annually.

Taystee Bread Co., which is affiliated with Purity Bakeries Corp., Chicago, has taken over Modern Bread Co., Nashville, Tenn. Charles Barham, Jr., who was president of Modern Bread Co., will remain as general manager of the plant.

United Biscuit Co. of America, Chicago, has filed articles of incorporation in Wisconsin. The authorized capital stock is $1,099,080.

Washington Frosted Foods, Inc., has constructed at Kent, Wash., a modern plant for processing and freezing vegetables. The plant is two city blocks long.

PERSONNEL

John G. Bates has been elected chairman of the board of Adolf Gobel, Inc., Brooklyn, N. Y., to succeed H. R. Bullock, who became chairman of the executive committee. A. E. Nelson was elected vice-president to fill the vacancy created by the promotion of Mr. Bates. Frank M. Frior continues as president.

Lawrence T. Dee, vice-president of Utah Canning Co., Ogden, has been elected president of Utah Canners Association.

J. E. Evans has been promoted to the presidency of Houston (Tex.) Coca-Cola Bottling Co. Glen Woodson was made general manager.

Patrick F. Gallagher, regional manager of National Bread Co. at Buffalo, has retired after 30 years with the company and a lifetime in the baking business.

E. H. Goldsmith is now vice-president of the Omaha plant of Omar Baking Co. He has been sales manager at Omaha.

J. K. Gregory, Fayetteville, Ark., heads up Ozark Canners Association.

Walter E. Guyette has been advanced from vice-president and general manager to president of Harvard Brewing Co., Lowell, Mass.

Wesley Hardenbergh has been appointed acting president of Institute of American Meat Packers to fill the unexpired term of the late William Whitfield Woods. He has been with the Institute since 1920 and has served as vice-president and administrative assistant to Mr. Woods since 1928.

Roy Ingalls, manager of Washington Packers, Summer, Wash., has been named president of Northwest Frozen Foods Association. R. I. McLaughlin, of R. I. McLaughlin Co., Puyallup, Wash., was elected vice-president and E. M. Burns, secretary.

Joseph Koepping, president of West Point Ice Cream Co., has been chosen head of the Nebraska Ice Cream Manufacturers Association.

John Kress has been appointed general production supervisor for Hathaway Bakeries, Inc., Cambridge, Mass.

J. C. Lasswell, manager of the Spokane unit of Centennial Flouring Mills Co., has been elevated to the vice-presidency, with headquarters at Seattle. H. M. Wilbanks replaces him at Spokane.

George Livingston resigned recently as executive vice-president and treasurer of Millers National Federation to devote his time to personal affairs. Herman Steen, secretary of the Federation, takes over the duties of the executive vice-president. Joseph C. Beaven, Standard Milling Co., Chicago, will function as treasurer.

J. M. Livingston has resigned as president of Ward Baking Co., New York.

John P. Murphy, Omaha, is now president of Lincoln (Neb.) Packing Co. V. E. McArthur was named vice-president, George W. Mechling, secretary, and George M. Bronn, treasurer.

J. L. Newton, former territorial sales manager of Falstaff Brewing Corp., St. Louis, has been named assistant to Alvin Griesedieck, president of the company.

Ernest Nickles, Navarre, heads up Ohio Bakers Association.

Fred J. Nutter, Corinna, recently was elected president of Maine Dairymen's Association.

Pat O'Daniel has been elected president of W. Lee O'Daniel Flour Co. to succeed his father, who was elected governor of Texas.

George Rector, internationally known chef, has joined the staff of Wilson & Co., Chicago, as director of home economics. He will assist the company in its consumer education work and will function as consultant in the creation of new products.

George E. Ruppert has been elected president of Jacob Ruppert Brewing Co., New York, to succeed the late Colonel Jacob Ruppert. He has been with the brewery for 40 years and is the largest individual stockholder. For twenty years he has functioned as vice-president of the company.

Robert B. Smallwood, formerly director of sales of the Borden Co., has been elected president and a director of Thomas J. Lipton, Inc., Hoboken, N. J. He succeeds Sir George Schuster, who resigned because of election to the British Parliament.

Herman A. Smith, Worcester, Mass., recently was named president of New England Association of Ice Cream Manufacturers.

R. I. Tenney, formerly assistant director of Wahl-Henius Institute, Chicago, has been made a director. He succeeds Eric H. Hutchison, who is now assistant brewmaster of Eldorado Brewing Co., Stockton, Calif.

Frank J. Wear, Columbus, has become manager of the Milwaukee branch of Omar Baking Co. He had been manager at Columbus since November, 1935.

DEATHS

Charles A. Baber, 54, president and treasurer of Baber Baking Co., Inc., Marion, Ohio, Jan. 15.

Thomas J. Bryan, 69, retired technical adviser to General Foods Corp. and formerly chief chemist for Calumet Baking Powder Co., Jan. 23, at Oak Park, Ill.

Elmer E. Chase, 77, president of Canners League of California and founder of Richmond-Chase Co., Feb. 13, at San Jose, Calif. He entered the canning industry 60 years ago. In 1926 he was president of National Canners Association.

Christian W. Feigenspan, 62, president of Feigenspan Brewing Co., Newark, N. J., Feb. 7. He had been with the Feigenspan company 41 years, during which time he served as president of the United States Brewers Association for several years. During Prohibition, he carried to the Supreme Court a fight against the constitutionality of the Volstead Act.

Emil Hamilton, 76, founder of Hamilton & Sons Canning Co., New London, Wis., Feb. 5.

John C. Mandery, 67, owner of John C. Mandery & Son Dairy Co., Westwood, Ohio, recently.

James G. McPherson, 63, vice-president of W. H. Edgar & Son, Inc., Detroit, Jan. 29. He had been associated with the sugar company for 27 years.

Frank W. Miller, 61, president of Baum Ice Cream Co., Cleveland, Feb. 1. He was formerly associated with the late William E. Telling of the Telling-Belle Vernon Co.

ASSOCIATED INDUSTRIES

N. W. Ayer & Son, Inc., Philadelphia, has established the Ayer Foundation for Consumer Analysis. The foundation is under the direction of Dr. Donald A. Laird, who resigned as head of the Rivercrest Laboratories at Colgate University to take the position.

Buffalo Foundry & Machine Co. has promoted Charles W. Pearson to executive vice-president and general manager.

Canning Machinery & Supplies Association has reelected W. E. Nicholoy, Scott Viner Co., president.

Edge Moor Iron Works, Inc., New York, has appointed Cochrane Engineering Co., Chicago, sales representative for fabricated vessels and chemical equipment.

General Electric Co. will spend $2,500,000 for the erection of a modern building to house its Chicago headquarters.

Owens-Illinois Glass Co., Toledo, has appointed Dr. Julian H. Toulouse technical sales representative.

Westinghouse Electric & Manufacturing Co. has appointed Adolph Frankel sales manager of special products of the lamp division.

Deadline at Forty

(*Continued from page 122*)

education of the younger one. The standards of education for the young are, in many respects, constantly increasing. This does not apply to all subjects—it is greatly to be doubted if the average grammar school graduate of today knows as much about arithmetic as did his predecessor of 25 years ago. But in the physical education which teaches the fundamental control of the body and so lays the foundation for training in motion studies, and in the basic theories of chemistry and physics which can help a worker to understand modern processes, the younger worker may have all of the advantages.

And yet, the fact that older workers are crowding the night school classes, the adult education programs and the trades schools of the labor unions, should not be overlooked. An education for which an older worker has made sacrifices, may be better than one which a younger worker has had forced upon him.

To compensate for losses in muscular activity, the older worker may need special training in motions, postures, and so on. If it merely restores him to speed, this training may be an excess cost. But when it raises his speed, betters the quality of his production, and helps younger workers too, this training is great gain. For whereas new training introduced to make all workers "speed up" may be resented, that which is taught by example while helping a veteran to keep his post is the best kind of industrial relations.

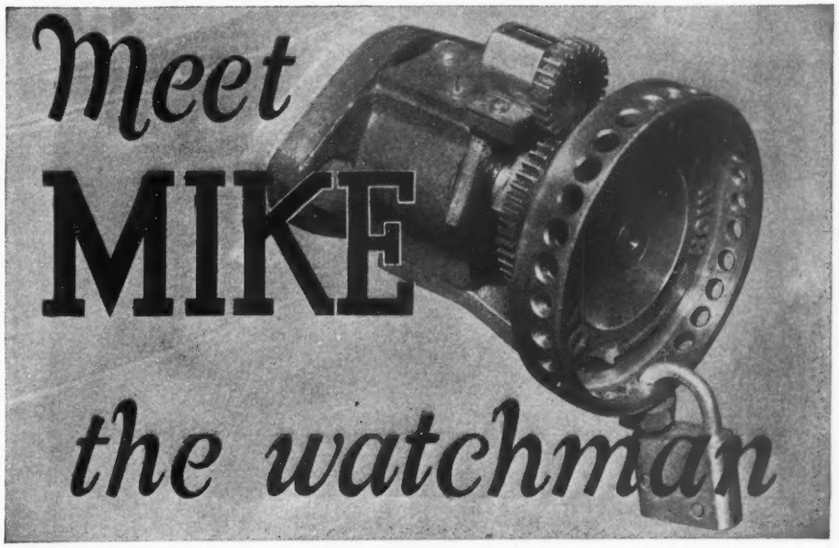
The greatest handicap of the older worker is physical unfitness due to industrial accidents. He was employed through the years when plants in general were far less safe than now. The will to be safe has been strong in the best plants during the past 25 years, but the methods and mechanics of safety have had to be developed. And the law of probabilities infers that at some point in his thousands of hours of employment, the older worker has been hurt.

The older worker is more susceptible to some industrial diseases than his younger companions. His ability to throw off some poisons decreases as his years advance. The effects of some kinds of bad conditions on the human system are cumulative.

And yet it should not be forgotten that the best "smoke eaters" in the fire departments are older men, and that there are bad conditions which the older worker stands better than the younger one. Furthermore, it is better to cure a bad condition than to depend upon hiring men who can stand up under the bad condition.

The older worker has learned to protect himself. He thinks and acts safely. He has outgrown bravado. He will use instruments to detect possible unsafe atmospheres, and he will erect guards and use goggles and safety clothing, when the younger worker may take chances. He is likely to take better care of his general health, to avoid over-strenuous athletics and over exposures, and actually to have fewer days lost time due to illness than his "perfectly healthy" young friends. He has seen the consequences of taking chances, perhaps even felt them. He is habituated to safety, or he would not have survived to become an older worker.

Compensation insurance costs are no higher for the older worker, generally speaking, than for the younger one. But when he does have an accident or become ill, he is likely to be



Right now, in many of the world's greatest food plants, this micrometer adjusting wheel controlling the valve action of the Kemp Industrial Carburetor, is on watch . . . safe-guarding the highest standards known in baking, roasting, high-temperature cooking and can making . . . *and watching the gas bills too!*

Experience in these plants show that Kemp 100 percent premixing of gas and air cuts fuel consumption 15 to 50 percent, that accurate control of flame characteristics and flame pressure permit new standards of quality and uniformity. Tell you more? Gladly. Address **The C.M.Kemp Manufacturing Company, 405 East Oliver Street, Baltimore, Maryland**

KEMP of BALTIMORE

slower to recover, and therefore group insurance rates for him may be higher.

The older worker accumulates seniority privileges, and may "rate" the highest per hour wages accordingly. He has the skills most likely to be displaced by mechanization, and where seniority governs dismissal and layoffs, he may be an obstacle to modernization. If employee pension plans are in use, he may increase the costs for them. And if some such term of service as 25 years is needed to earn a pension, then the hiring of an older many may have the disturbing effect of giving to a younger man benefits of future security which are withheld from his older fellow worker.

On his side of the scale, is the common sense of the older worker in accepting wage reductions when his efficiency starts to diminish.

The older worker is a boon to the industrial relations manager. It is true that the grumpy older worker, like the demon mother-in-law, is a trite subject for the cartoonist. But, in general, the older worker is cheerful. He understands policies and accepts them. He takes overtime without grouchiness, since he is unlikely to have "dates" which seem more important than extra pay. Family troubles seldom cut his efficiency, as he either gets along with his wife or is calloused to fighting with her.

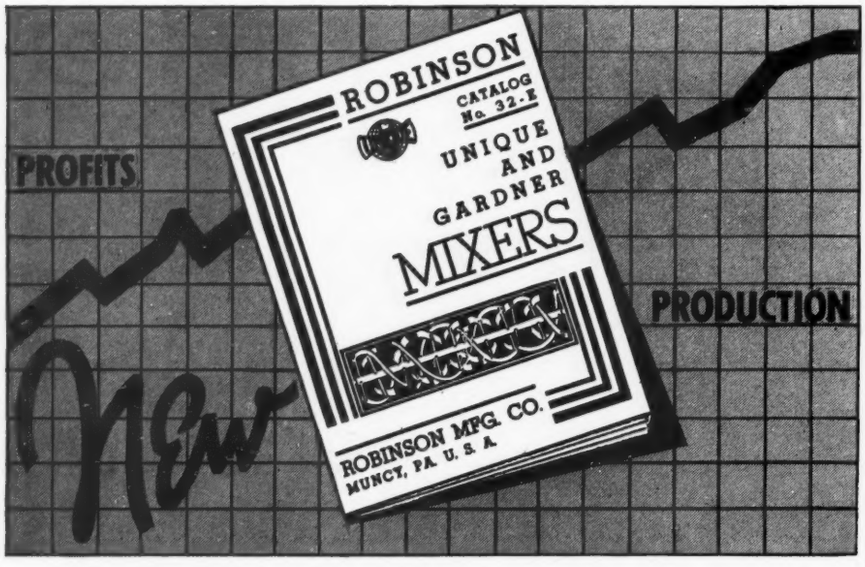
He has had to give criticism, he knows its real purpose, and he takes it well. He builds the morale of the whole shop.

When talking around his home and among his friends, he likes to give the place where he works a clean bill of health. Unless treated very badly, he is the worst possible target for the radicals. He is responsive to the public relations program, and prefers to be a rooter for his employer.

Responsiveness is one of the best assets of the older worker. He is the principal source of the new ideas found in the suggestion boxes. His ideas are likely to be well thought out before he submits them. He is careful of his personal appearance, and of the equipment which he operates. He has initiative, but of the kind which springs from the will to cooperate rather than from the wish to "show up somebody."

In this age of mechanization, when self-control and team play are more important in most jobs than eagerness and nervous energy, the older worker has many advantages. Managements are paying too much attention to the "problem" older worker, and too little to the sound one.

Any personnel operation must get down to direct comparisons of individuals. But the older worker is the backbone of the production line. In too many cases he is unprofitably shoved aside, merely because Dr. Osler once made a wisecrack.



• Your Buying Guide to Modern Food Processing Equipment

This new 56-page Robinson Catalog is practically a *textbook on modern Mixers . . .* a *textbook* and buying guide that you as a responsible production executive, will welcome. Here is up-to-date data on exactly the mixers you can best fit into your processes to speed operations, cut costs, get a better quality product. It is only one of several such Catalogs issued by Robinson, covering Pulverizers, Grinders, Crushers, Sifters, Agitators and other equipment for Food Processing Plants.

Now—fill in and send the Coupon below for the new Robinson 56-page Catalog (8½ x 11; 133 illustrations) . . . or indicate on coupon other Catalogs or information desired.

CLIP THIS COUPON AND MAIL TODAY

ROBINSON MFG. CO. 71 PAINTER ST. MUNCY, PA.

Gentlemen: Without cost or obligation send me at once (Your new 56-page Mixer Catalog No. 32 . . .) (I prefer to have you send your Catalog on . . .). Fill in type of equipment in which you are interested.

Name ..... Title .....

Company .....

Street ..... City and State .....

Nuts Shelled by Explosion

(*Continued from page 123*)

operating on vertical shafts. These belts are properly spaced to convey the nuts, hold them and guide them through the machine, causing them to pass over a small circular saw which cuts a slot through the shell. The nut is then further conveyed by the belts along a guide rib that fits into the slot cut by the saw, and through which vertical openings provide for the introduction of the explosive gas mixture into the nut. Mixing valves are provided for proportioning the acetylene and oxygen gases

used in filling the shell. After passing over these gas jets, the nuts are dropped at the end of the belt line through the center opening of a circular gas burner which ignites the explosive.

The shell is blown from the kernel, and advantage is taken of the force of the explosion for making a partial separation of the meat lobes from the broken shell. This is accomplished by two concentric circular receptacles below the flames of the ignition burner, one to receive the nut kernel, for it tends to drop vertically after the explosion, and the outer one, larger, to receive the shell which is shot out laterally, due to the force of the exploding gas.

The belts run at a speed of 110 ft. per minute. An adjustment on the circular saw permits regulation of the depth of the cut into the shell. The guide rib, which seals the aperture in the nut after it is filled with gas, is .055 in. wide, with gas apertures .05 in diameter. Allowing 2 in. per nut, the machine has a capacity of approximately 900 lb. of whole walnuts per hour.

Approximately 60 per cent of the nut meats come out whole or in unbroken half pieces; the remaining pieces are large and easily separated. While the Internal Combustion Nut Cracker will not eliminate hand labor entirely, it will greatly reduce this tedious and expensive part of nut cracking and will increase the quality of the meats.

The machine, shown in the accompanying pictures, is one built in a preliminary experiment, and will be improved as to design and performance when it is manufactured for commercial use. Its cost was less than $200, and with the design accomplished and produced even in small quantities, it is believed the cost will be considerably less than this amount.

Marketing Problems Solved

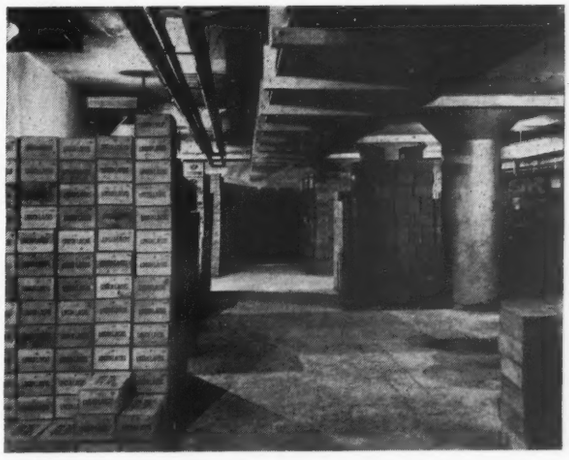
(Continued from page 125)

the cloth wrapper, but each cut of the meat carries an identification of quality. So the fresh veal and beevetts can be bought by the housewife on the same basis as she has for years been able to purchase bacon and ham.

In addition to these advantages, the packaged carcasses have the attribute of greater sales appeal. The large refrigerated rooms where the dealers buy their meat are much more attractive and sanitary in appearance when filled with carcasses in the clean looking, snowy white wrappers than when filled with carcasses covered with hides or stockinets. The dealers know that the meat is free from contamination, and that it is vouched for in quality by the meat packer whose trademark it bears.

For this method of packaging, Swift & Co. will use during a year about 20,000,000 yd. of cotton cloth (7,500,000 lb. of cotton). On the basis of these figures, and considering the cost of putting on and taking off the protective cloth wrappers and paper bags, one might assume that the packaging of fresh meat carcasses would result in considerably increased costs for retailer and consumer. Such is not the case, however. Savings in freight, higher prices on the better hides, reduction in spoilage loss, price stabilization during temporary market gluts, together with lowered sales cost through dealer and consumer preference, go a long way toward counterbalancing the additional expense of this

Economical Control of LOW TEMPERATURE



This modern cold storage room, insulated with Mundet Corkboard, maintains the constant temperatures required for safe storage of perishables.

Mundet Cork Insulation conserves refrigeration and permits precise temperature control. In cold storage rooms, in refrigerated cars and trucks, in ships and terminals, Mundet Cork Insulation helps to safeguard perishables in any climate or season. Because it is pure cork, Mundet Insulation offers a natural, dependable barrier to heat infiltration. Fabricated by the most improved methods into Corkboard and Cork Pipe Covering, Mundet Insulation is guaranteed to meet service requirements. It is readily adaptable to individual needs, regardless of the size of the plant. Mundet offices in principal cities offer prompt service. Ask for suggestions and estimates covering the application of Mundet Cork Insulation to your specific needs. Address Mundet Cork Corporation, Insulation Division, 65 S. Eleventh Street, Brooklyn, N. Y.

MUNDET CORK INSULATION

protective packaging.

The virtues for this method of packaging carcasses hold for lamb as they do for veal, even though the commonly known marketing practice for this meat does not involve shipping the carcasses with the hide or pelt on.

Label Design

(*Continued from page 126*)

reminiscent of the laboratory flask are hard to label automatically. Even a lightweight stock tends to spring away at the edges, catching and pushing, and falling off. The position a label is to occupy must, therefore, be chosen with care or adequate provision made for its application by inserting an appropriate panel.

Labels can be applied on flat, angular, or convex and concave planes running in one direction. They may form a right angle, a triangle, or a U-shape in cross-section. With certain equipment, and the right surface, they may wrap completely around the container and overlap. But there must always be a sufficient expanse of glass to receive the label, and sufficient label to be fastened.

Size, as apart from shape, is relatively unimportant from the purely production viewpoint. Labels as small as $\frac{7}{16}$x$\frac{7}{16}$ in. or as large as 6x6½ in.—even larger with special equipment—are possible. Too small a label, however, will be lost upon a container, while too large a label transfers what might have more pleasing possibilities into a billboard. The shape and size of the container influences the proper choice.

Labels that project a quarter of an inch or so around a corner or reverse curve are difficult to handle. The stock tends to straighten out, breaking the bond of the adhesive. Extending them further, or stopping them before the corner or curve gives a better looking and more efficiently handled result in most cases.

Labels too large for their location create similar trouble. All too frequently the designer has the label extend "all the way to the edge" of panel or container. There is a reason for that stipulation; a narrow band of glass surrounding the label detracts from the focal center of the label design. If the label dominates the container as it should, the larger its area of dominance the more effective and the larger the apparent size of the package. However, containers vary because of minor irregularities of mold and uneven shrinkage of glass. Register is not always of hairline accuracy. The result on a quantity production basis is a label that projects, catching and tearing to mar the finished appearance. This finally ends in a cutdown label as a concession to repeated demands, with impaired design. From the designer's standpoint, appearance may be improved and the difficulty of the necessary registration margin eliminated by using a considerable smaller label, utilizing the contents seen through the container as a background, and throwing the label into high relief.

Label Shapes Unlimited

In label shape, the designer has almost unlimited scope. Outside of a few qualifications, almost any combination of curves, straight lines, or irregularities may be efficiently handled and registered. Angles that are too acute can make trouble, as the label may shift in feeding. Full circles or ovals too close to the full circle are difficult to register, if the type

..about VILTER PakIce..

ECK-RICH
PETER ECKRICH & SONS, INC.
MANUFACTURERS & DISTRIBUTORS OF
Luncheon Meats & Provisions
KALAMAZOO, MICHIGAN

December 20, 1938

Vilter Manufacturing Company
2217 South First Street
Milwaukee, Wisconsin

Gentlemen:

We are exceptionally pleased with our Pak-Ice machine that you furnished about a year ago, as well as the compressor, coils, and miscellaneous equipment that completed the refrigeration installation.

The ice resembles snow, but is granuler and mixes well with the sausage, maintains constant temperature of the meat during the mixing and eliminates dulling of the knives. Its use has materially reduced our ice cost.

In bringing out this machine, the Vilter Manufacturing Company has made a valuable contribution to the meat industry.

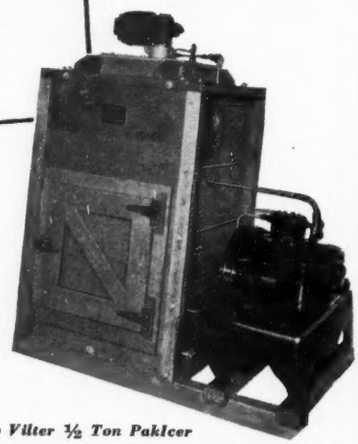
Very truly yours
PETER ECKRICH & SONS, INC.
Clement P. Eckrich
President

CPE PJ

Mr. Clement P. Eckrich
President
Peter Eckrich & Sons, Inc.

"Its use has *materially reduced our Ice Cost . .*"

Superior Since 1867
VILTER
Refrigeration ... Air Conditioning



The New Vilter ½ Ton PakIcer

For packing perishables, PakIce offers better protection. It packs closely around the product, forming a soft, secure "blanket of cold" that prevents the passage of warm air.

And in Meat Processing . . . The snow-like texture of PakIce mixes well with sausage meat, maintaining constant temperature during the mixing, without dulling your cutting knives. PakIce handles easier, too, and has no sharp particles to damage products.

You will profit by using Vilter PakIce! Savings as high as 75% over present ice costs have been recorded. The coupon will bring you some interesting facts on its use in YOUR Plant.

THE VILTER MFG. COMPANY
2115 South First St.
Milwaukee, Wis.

THE VILTER MFG. CO.
2115 South First St. Milwaukee, Wis.

Please send us more details on Ice Savings and greater convenience, with the sensational new Vilter ½ Ton PakIcer. Also information on PakIcer Equipment for the following Daily Ice Requirements:

..... **1 ton per day** ..... **2½ tons per day**
..... **5 tons per day** ..... **tons per day**

Name .....
Address .....
City ..... **State**.....

must read horizontally. This trouble may be avoided, at the same time developing a more interesting design, by the addition of a projecting die cut to serve as guide or, what is simpler, by flattening the form at top or bottom. Irregularly shaped labels with too many projecting points are apt to adhere imperfectly. It is surer to carry them as part of the printed design alone, simplifying the external die cut as much as possible.

Some more difficult shapes can be handled at additional expense by running them on gummed stock and reapplying adhesive on the machine, but this is seldom advisable. It is safest to use a relatively simple form with at least one flat section or irregularity to facilitate mechanical registration. These limitations develop not only a better job which will retain its good appearance longer, but also one which is more economical when it reaches production.

Almost any material may be used. Labeling equipment on the market will handle the various grades of paper, paper backed metal foil, plain or embossed foil seals, or even certain types of paper backed fabric.

Weight and Finish Important

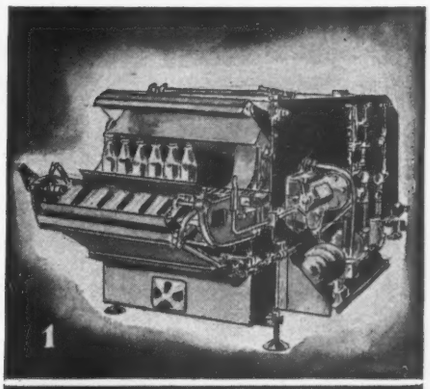
A far more important question is that of weight and finish. For ordinary purposes a 45 to 50 lb. stock, not too highly calendered, gives the best results. It is also essential that the grain of the paper run horizontally around the container upon curved labels. Texture finishes that are too absorbent or too rough are usable, but run a greater risk of picking up surplus adhesive with resulting stains, as well as of later soilage from handling on the market. Foil labels stick together by magnetic attraction in feeding. Certain newer types of machinery have compressed air attachments blowing a jet against the stack sides to separate them. Metallic papers of too high gloss finish will scratch and mar in the handling, both on the production line and later in the store. A pliable varnish or lacquer helps to eliminate this danger or they may be made doubly and triply effective by laminating cellulose to the surface if the expense is warranted. Generally speaking, a varnished or lacquered label is always more effective than a dull surface. It will stay clean longer and be simpler to handle.

Transparent labels present particular problems and are better adapted to hand than to automatic application. This applies to both those printed on cellulose and to the decalcimania type. While both are very effective in that they eliminate the distraction of label background, substituting the background of the product itself, they are best confined to small quantity production.

It is possible to have label material printed directly upon the container no matter what its shape, by a recently developed process. The finest detail can be reproduced with complete fidelity, the only apparent difficulty being the inky coverage on large solid areas. By this method labels may be applied for removal by washing or scrubbing, or may be baked permanently into the surface.

This process is far less expensive and far more flexible than molding the design into glass or plastic, but even the latter has a distinct quality appeal for certain types of products. Where the only information required is a

FOR EFFECTIVE
and
ECONOMICAL
STERILIZATION



1. IN BOTTLE WASHERS—and throughout the entire milk plant—the use of HTH Products is an assurance of safe, germ-free equipment and containers.

2. FIGHTING MOLD – Mold growths, one of the worst offenders in causing spoilage in food plants, are easily kept down by periodic spraying with solutions made from HTH Products.

3. IN BAKERIES – the use of HTH Products is one of the most effective means of controlling mold and rope and protecting the quality of finished bakery products.

Let us send literature covering the use of HTH Products in your particular plant operations.

HTH* PRODUCTS

THE MATHIESON ALKALI WORKS (INC.)

60 EAST 42ND STREET NEW YORK, N. Y.

Pioneer Manufacturers of Chlorine Products for Over Forty Years

*HTH PRODUCTS INCLUDE HTH, HTH—15, LOBAX

single name or trade-mark, or where the work of selling is performed by a supplementary carton, the container design may very well incorporate this as an essential, or accessory, motive.

The limitations upon design are, therefore, not particularly narrow; within them are vast fields barely touched in the rush for distant pastures and their imagined superior verdance. To start off at a tangent may be easier than tackling a given problem in a direct, straight-forward manner, but its advisability does seem somewhat doubtful. If label design cannot be developed in accordance with these ample terms, why use a label at all?

But if a label is to be used, it should not be overwhelmed by the competition of additional seals and strips. There are times when a distributor may wish to add his name to that of the manufacturer, or where a group of products carry the same label and require individual definition. As a general rule, however, one label is enough for any package—and frequently it is too much, if it has been carelessly designed.

Directions may be buried in margins, out of the path of the main sales message, or relegated to the label back, visible through the container. In this latter case, care must be taken to design or select a container free from ribs or corrugations, as these distort the directions or make them illegible.

The one important thing that a label must do, if it is to be an asset instead of a handicap, is to convey graphically and clearly the value of the contents to each and every person who might buy. Its functional value is more important than its aesthetic value, even when the two become almost identical. Improper placement or proportion distracts from that main purpose. Improper adherence and out-of-line text is no particular help. The entire unit container, closure, and label should focus the attention where it is most needed—not upon the label, but upon what the label says. Any tendency in another direction is wasting valuable split-seconds of consumer attention.

It doesn't seem commonsense to put a good product in a poorly designed package. It seems careless to leave important matters of visibility and legibility to chance. But it seems even more foolish and futile to turn out a design, however excellent, that cannot be shown to best advantage in the position for which it was planned.

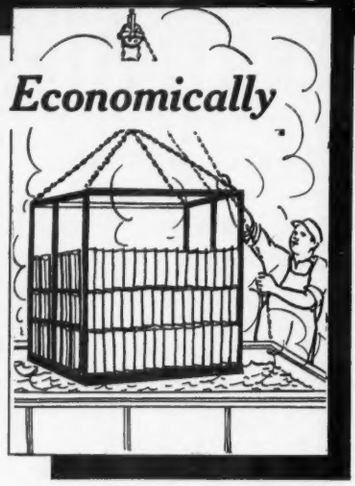
Individual equipment varies. Each product has its own particular demands. But every qualification can be met and every requirement fulfilled without creating unnecessary production headaches. There can be no progress if the *status quo* is unchallenged; as a designer, I have a sincere desire to do things that have never been done before, in spite of what experts say. Yet in the challenge of rigid specifications lies the greatest stimulation to create something different—to beat the machine on its home ground, playing by its own rules. It does seem even a little silly to change equipment costing thousands of dollars for an eighth of an inch of paper; there may be times when it is worth while. But it is a lot more fun to take the handicaps and limitations in one's stride, to capitalize to the limit upon all possibilities—discover new ones if possible, turn out a job free from all production difficulties—and make it a better job. It can always be done.

Two more TOUGH Cleaning Problems MADE EASY with Oakite Cleaning

BREAD PANS WASHED Economically

Lowered costs is only one of the advantages a leading eastern bakery now enjoys because of their recent adoption of Oakite Composition No. 40 for washing bread pans.

A short boil, followed by a hot rinse and oven drying, leaves the pans clean. The "burned-in" surface is preserved. There is no spangling of the tinned surfaces. And... Oakite cleaning costs are 10% less than with their previous method.



SMOKE HOUSE WALLS CLEANED Easily

Until a short time ago, cleaning the smoke house walls in one meat packing plant was a long tedious job. Now, fast, energetic Oakite materials applied under steam pressure, do a far superior job... at less cost ... and in a fraction of the previous time.

If you are anxious to improve plant or equipment cleaning, investigate Oakite materials. They can help you maintain high sanitary standards at little cost. Write for data on your work.

Manufactured only by
OAKITE PRODUCTS, INC., 26G Thames St., NEW YORK,
Representatives in All Principal Cities of the U. S.

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
MATERIALS & METHODS FOR EVERY CLEANING REQUIREMENT

CERTIFIED CLEANING

(*Continued from page 160*)

is poor, and was least suitable of all the tested metals for any equipment where contact is prolonged, as in storage. Nickel serves well for pipes, juice containers, mixing vats, open fermenters and the reservoirs of bottle filling machines. The rustless (18—8) steel is excellent for nearly all equipment, but less satisfactory for closed fermenters and for mixers. Monel Metal and copper are useful for juice containers and other equipment not exposed to prolonged contact.

The principal effects of the metals on wines concern color and sparkle. The influence on flavor and bouquet is much smaller for a given concentration of dissolved metal. The highest permissible concentrations of various metals in wine (causing no perceptible change) are as follows, in milligrams per liter: iron, 1; tin, 1; chromium, 15; copper, 60; aluminum, 100; zinc, 200; nickel, 200.

Digest from "Metals in Wineries," by R. W. Müller, *Korrosion und Metallschutz* 14, 385, 1938 (Published in Germany).

CANNED FOODS

Chemical Analysis of Ancient Canned Foods

ROAST VEAL canned in 1824 had an internal pressure of more than 15 lb. per square inch. The gas analysed: Hydrogen, 85.5 per cent; Carbon dioxide, 7.2 per cent; Oxygen, 0.2 per cent; Nitrogen (by difference), 7.1 per cent. The meat was a bright pink color like salmon flesh. On exposure to air it turned brownish gray, but on resterilization it turned pink again. The gravy had pH of 5.5 and had dissolved considerable metal: Iron, 71 ppm.; Lead, 3 ppm.; Tin, 783 ppm.; Zinc, 27 ppm. Rats and a cat ate the meat without ill effects. Free fatty acids were very high but, surprisingly, the vitamin D survived the long storage.

Carrots and gravy canned in 1824 had about 15 lb. gas pressure inside, analysing 79.5 per cent Hydrogen, 15.3 per cent CO_2, 0.4 per cent Oxygen, 4.8 per cent Nitrogen by difference. The pack was very dry. The carrots were bright orange but turned to a dull brownish orange on exposure to air and did not regain the original color on resterilization. Liquid expressed from the carrots contained much dissolved metal: Tin, 2,440 ppm.; Iron, 308 ppm.; Copper, 5 ppm.; Zinc, 4 ppm.; Lead, nil.

Other data are given for roast beef packed in 1852 for Belcher's Expedition; Libby's Tripe, 1880; dried powdered carrots, 1855; dried meat powder, also 1855; and "Portable Soup," 1771. The latter was a slab of a compressed dehydrated soup that was almost devoid of smell and taste but, otherwise probably had not changed much in 160 years.

Digest from "The Examination of Some Tinned Foods of Historic Interest. Part 3." By J. C. Drummond and T. Macara. *Chemistry and Industry*, 57, 829, 1938 (Published in England).

CEREAL PRODUCTS

Composition of Rice Germ

RECENT JAPANESE IMPROVEMENTS in rice polishing machinery have made it possible to separate the whole germ from the grain, so that now for the first time an exact study of rice germ composition can be made with an ample supply of sample, free from other parts of the rice grain. In a general way such analyses do not differ greatly from those made before pure rice germ became available in quantity, but a new sterol has been identified as one component. It has been named *satisterol.* Again, the carbohydrates of rice germ had not previously been identified. The sugar content is about 5 per cent, chiefly sucrose with small amounts of glucose, fructose and raffinose. In vitamin potency rice germ ranks fairly high in vitamin-E content, but has very little of the growth promoting factor (vitamin B_2). It contains ergosterol, which by irradiation is converted to Vitamin D. Numerous tests with rats were made to confirm the chemical data on vitamin content.

Digest from "Chemical Constituents of Rice Embryo," by Riang-Ha Kimm, *Scientific Papers of the Institute of Physical and Chemical Research* 34, 637, 1938 (Published in Janan).

DAIRY PRODUCTS

Keeping Qualities of Sour Cream Salted Butter

WHEN SALT BUTTER made from sour cream is held for ten days at 60 deg. F. (as it may be in trade channels or in the home) higher scoring butter does not keep as well as lower scoring butter. Bacteria have some effect on the keeping qualities, and large numbers of rod shaped organisms are usually a sign of poor keeping quality. High plate counts on special media (tryptone-skim milk agar for protein splitting, and tributyrin medium for fat splitting bacteria) also normally indicate that the butter will not keep.

Digest from "Some Causes for the Deterioration in 10 days at 15.5 deg. C. of Salted Butter Made from Sour Cream," by J. C. Flake and E. H. Parfitt, *Journal of Dairy Science*, 21, 545, 1938.

Vitamin Butter Color

A PREPARATION for accomplishing two improvements at the same time has been developed for addition to butter, margarine or other edible fats. The first effect is color, either to enhance or to imitate the natural color of butter. The second effect is vitamin enrichment, achieved by using a vitamin extract as vehicle for the butter color or dye.

Carrots, tomatoes, red haws and other fruits or vegetables are simultaneously dried and extracted with hot oil, at 75 to 125 deg. C. (167 to 257 deg. F.). The vitamin-rich extract is a suitable vehicle for oil-soluble dyes, selected to impart the desired tint to the product. As the invention is described in Danish Patent 54,611 (granted April 19, 1938, to Henry C. E. Tillisch, Copenhagen), the vegetables or fruits are extracted under alternate application and release of pressure, and chemicals such as salt, sugar or tartaric acid may be added. In general vegetable oils are used, but vitamin-rich extracts can also be obtained with suitable mineral oil fractions.

Vitamin C in Milk

FOR VITAMIN C enrichment of canned milk, it has been found beneficial to maintain certain specified milk conditions so that decomposition of the vitamin is prevented. As the invention is described in British Patent 486,546 (granted July 7, 1938, to Peder K. Henriksen, Canned Cream and Milk Co. A/S, Odense, Denmark), it is particularly important to avoid exposure to light, heat and oxidation. Hence the milk, prepared for canning, is cooled to about 10 deg. C. (50 deg. F.) under a moderately high vacuum and in darkness. Ascorbic acid, or a preparation of natural vitamin C from any suitable source, is then added to give the desired concentration, and the specified conditions are maintained until the milk is transferred to cans and sealed. Canned milk with a substantial and lasting vitamin C potency is thus obtained.

Quick Aging Blue-Veined Cheese

HOMOGENIZATION of the milk is a new step in the making of blue-veined cheese which makes possible an aging

period of only two to four months instead of the customary eight to ten months.

Other conditions provided for in U.S. Patent No. 2,132,077 and made possible by the homogenization of the milk are:

1. A heating temperature of 80 to 100 deg. F. under a pressure of 2,000 to 3,500 lb. per sq.in. without injury to natural lipases in the milk;
2. A ripening period of 20 to 30 minutes instead of the usual 40 to 60 minutes;
3. A rennet concentration of 4 oz. per 1,000 lb. of milk as compared with 3 oz.;
4. A setting temperature of 90 to 92 deg. F. as against 85 to 86 deg. F.;
5. A cutting time of 35 to 40 minutes after setting in contrast to 90 to 120 minutes;
6. A dipping time of 35 to 45 minutes after cutting (whey acidity 0.15 to 0.17 per cent lactic acid) instead of 60 to 90 minutes after cutting (whey acidity 0.2 to 0.21 per cent lactic acid);
7. Heating of the dipped curd to 93 to 95 deg. F. by the addition of hot whey;
8. Shortening of the draining time on the cloth from 20 to 30 minutes to 3 to 5 minutes;
9. Mixing of the blue-mold powder into the curd on the drain cloth in place of dusting it on layers of curd in the hoop;
10. Turning of the hoops every 15 minutes for 4 hours instead of every half-hour for 4 hours.

The result after a 2 to 4 month aging period is a cheese which is uniform in texture and flavor with a luxuriant growth of brilliant green blue mold, a light colored curd and the characteristic sharp peppery taste.

The patent is assigned to Iowa State College Alumni Association, Inc., by Clarence B. Lane and Bernard W. Hammer of Ames, Iowa.

NEW! Starches SPECIFICALLY FOR PIE FILLINGS!

"PURITY" STARCH FL—For Fruit and Lemon Pies in which no milk is used.

"PURITY" STARCH M—For Cream, Chocolate, and other pies made with milk.

Both these starches offer unique practical properties found in no other starches. They are *tasteless*—do not "blanket" the flavor of the other ingredients. They set to a smooth, creamy body, firm, yet free from lumps and graininess. Fillings made with them have a rich sparkle—no dull cloudiness.

We invite your inquiries, and shall be glad to send you one or more trial bags on approval, from our nearest factory. Sets of tested and proven formulae for various types of pie fillings made with these starches are yours for the asking.

FOOD STARCH DIVISION
NATIONAL ADHESIVES CORP.
816 GREENWICH STREET, NEW YORK

PURITY

SUGAR

Simplified Treatment for Sugar Beet Juice

ELIMINATION OF FOAM in first carbonation step, saving of lime for clarifying the juice, and reducing the amount of fuel required in the evaporating steps are the benefits claimed in the process for treating beet sugar juices covered by U.S. Patent No. 2,143,594 granted to Earl B. Cowan, Grand Forks, N.D.

Addition of about 50 per cent of precipitate from first step carbonation to freshly extracted raw beet juice before heating to the customary 80 to 90 deg. C. cuts the quantity of lime generally used in defecation of juice. The practice also results in a granular precipitate which is easy to filter out and to wash free from adhering sugar. With the reduction in amount of wash water needed comes a lowering in quantity of water to be removed by evaporation with a resulting saving in fuel.

Mechanical action of centrifugal type of pump, used in handling the freshly pressed raw beet juice after the basic precipitate is added and before heating, causes a completeness of reaction between the basic sludge and acid juice and the liberation of gases to the end that little or no foam results in the first carbonation step.

YEASTS

Compressed Wine Yeast

DURABLE WINE YEAST CULTURES are made from compressed or paste yeast by adding a substance which is both physiologically and physically very similar to the cell plasm. As the invention is set forth in Austrian Patent 153,184 (granted April 25, 1938, to Otto Hummer of Vienna), the improved method is based on the observation that fresh egg albumen serves admirably as the substance resembling cell plasm. The compressed or paste yeast is first stirred with the egg albumen to a froth, a sterile porous carrier is then added and the product is carefully dried in a current of air.

If desired, a still looser texture may be imparted to the culture by adding to the froth about 5 per cent

of powdered sugar. This, as it ferments, evolves carbon dioxide gas which, escaping, has the desired effect on texture. Cultures made in this way serve excellently in wine making.

Froth Control in Yeast Production

IN MAKING YEAST with the aid of a molasses mash as nutrient, excessive frothing can be prevented by judicious application of certain anti-frothing agents.

One example is oleic acid which is effective only in emulsified form. In this emulsion the extremely fine globules, smaller than 1 micron (0.001 millimeter) in diameter, are not effective, but in the size range from 1 to 10 microns the emulsion tends to prevent frothing. The petroleum distillate known as "solar oil" is not in itself a frothing agent, nor is the sulfonated mineral oil product called "Petrov catalyst," but when solar oil and Petrov catalyst are used together they act as an effective anti-frothing agent in molasses mashes for yeast propogation.

Systematic investigation of this combination agent should reveal ways to make it even more effective. From the best information now available it seems best to use 2 parts of Petrov catalyst to 1 part of solar oil, about 0.048 and 0.024 grams per liter.

Digest from "Froth Control in Yeast Production," by B. D. Metyushev and S. E. Kharin, *Tekhnologicheskie Protsessy i Kontrol Pishchevoi Industrii*, 1938, 149 (Published in Russia).

How Yeasts Ferment Sugar

A NEW THEORY of the mechanism by which yeasts ferment sugar to produce alcohol runs directly opposite to the commonly accepted belief that maltose must be converted to glucose before it can be fermented.

On the contrary, says the new theory, not only glucose but every fermentable sugar must be converted to maltose before fermentation can proceed. Glycogen is an essential intermediate stage, between the original sugar and the final breakdown to alcohol and carbon dioxide. Instead of glucose passing directly to glycogen, it is now declared that the glycogen is actually formed by decomposition of maltose and that glucose cannot ferment until it is converted to maltose because without maltose there will be no glycogen.

In the complex enzyme action which accompanies the fermentation, zymophosphate has an important part, especially in the successive formation of phosphate esters. Maltose diphosphate, the first of these esters, has now been shown to be the same as "Robison ester," which is much discussed in studies of fermentation. The next phosphate stage is maltose tetraphosphate.

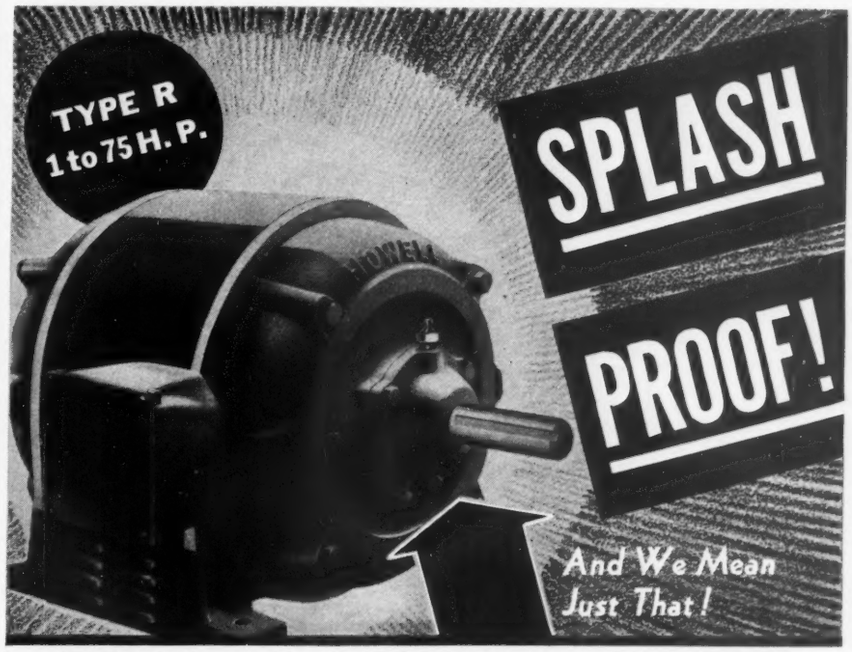
In view of the place assigned by this theory to maltose as a step in the fermentation process, it becomes highly important to know the exact chemical structure of maltose, in order that fermentation may be better understood. A study of maltose structure is therefore in progress.

Digest from "New Theory of Alcoholic Fermentation of Sugar," by Poul Ruus, *Oesterreichische Chemiker-Zeitung* 41, 194, 1938, (Published in Vienna).

MISCELLANEOUS

Crystalline Vitamin B_6

AFTER FIVE COMPONENTS had been identified in the vitamin B complex,



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Last word in low maintenance drives! . . . recommended wherever the presence of splashing or dripping liquids is likely to damage ordinary motors.

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These Splash-Proof motors are offered in sizes 1 to 75 H. P. — Many sizes shipped from stock. Write for Bulletin 1123A which explains in detail the HOWELL cost-cutting features. Better still, ask to have our nearest representative call at your office.

Note These Features

1. Cast iron terminal box gasketed — liquid-tight connection between conduit and motor.
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3. Continuous air circulation over entire stator core and all coils.
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there were three (vitamin B_1, lactoflavin and nicotinic acid) which were soon isolated in pure crystalline form, but the other two (vitamin B_6 and the filtrate factor) were not so easily purified. One of these, however, has now been obtained as a pure crystalline compound, from a vitamin-B preparation made from rice bran. The purification was accomplished by an adsorption method, using two different absorbents successively. The first was Japanese acid clay, from which the adsorbate was removed with dilute barium hydroxide solution. The second was animal charcoal, from which the adsorbate was removed with acetone. After purifying the acetone solution, the dissolved vitamin B_6 was recovered as colorless, melting (with decomposition) at 209-210 deg. C., after repeated recrystallization to remove impurities. The identity of these crystals as vitamin B_6 was confirmed by tests with rats.

Digest from "Crystalline Vitamin B_6," by A. Ichiba and K. Michi, *Scientific Papers of the Institute of Physical and Chemical Research* 34, 623, 1938 (Published in Japan).

Enzymic Activity Increased by Irradiation

THROUGH IRRADIATION of the enzyme prepartions themselves, products containing them, or organisms producing them, enzymic activities can be positively or negatively influenced by energy waves of varying lengths according to claims made in U. S. Patent No. 2,107,830 granted to Paul Liebesny and Hugo Wertheim, Vienna, Austria.

The wave length selected to give best results for any class of enzymes under the existing conditions may be identified as "short waves" including those of wave-lengths between 120 and 6 meters, "Ultra short waves" including those of wave-lengths between 6 and 2 meters, and "extremely short waves" including those of wave lengths between 2 meters and 1.8 millimeters.

Subjection to these energy waves may result in depressed or stimulated fermentative or catalytic action or higher or lower enzymic power.

In the case of yeast enzymes the zymase content of the yeast may be depressed or increased and its budding or propagation speeded up and made more prolific or retarded. In cheeses the ripening process may be influenced. In other instances bacterial activity may be inhibited or destroyed at the same time that mold or yeast activity is being stimulated or the reverse results may be had through change in wave lengths used or conditions of treatment imposed.

Eight specific conditions of use are given to illustrate results that may be obtained in connection with yeasts, molds, and acid-forming bacteria and thirteen claims are made to cover applications of wave-lengths ranging from 4 to 15 meters under an intensity of 150 milli-amperes and a working temperature of below 30 deg. C.

Formula for Flavored Gelatins

A NEW COMPOSITION for making fruit gelatin or the like is disclosed in British Patent 490,557 (granted Sept. 15, 1938, to Horace J. Green, H. J. Green and Co., Ltd., Hove, Sussex, England). A batch is made up by combining 54 parts glucose with 21 parts cane sugar, 9 parts powdered gelatin and 9.5 part citric acid. Orange extract may be added, or any other desired flavoring matter, and permissible food colors may be used for color effects. The procedure is to dissolve the sugar in one solution and the other ingredients in another solution, the two being combined as needed. The product can be in tablet form.

★ Cercon is an edible, tasteless wax suitable for coating food products requiring protection from the air.

It is supplied in six colors—Snowdrift, Lemon, Orange, Tangerine, Apricot, and Olive. It has an ASTM penetration of 50 with the 50 gram weight attached.

We will be very glad to send test samples to any interested company.

THE CONEWANGO REFINING CO.
WARREN, PENNSYLVANIA

BOOKS RECEIVED

REFRIGERATING DATA BOOK. Fourth Edition. Published by American Society of Refrigerating Engineers, 37 West 39th St., New York, N. Y., 1939. 527 pages, plus 134 pages in The Refrigerating Catalog; 6¾x9⅜ in.; cloth. Price, $4.

Food engineers who have anything to do with refrigeration, and most of them do, will find this book the most complete, useful and authentic compilation of data on refrigeration that is available. Divided into eight sections, each conveniently marked with a thumb tab for quick reference, the data book covers the principles of refrigeration, refrigerants, heat flow and insulation, air conditioning, foods, domestic-commercial machinery, industrial machinery and control and power.

The section on foods alone might be worth the "price of admission" to engineers in the food field. Occupying 53 pages, it covers fruits and vegetables, meat, brewery refrigeration, dairy products and eggs, sea foods, freezing of foods, precooling, refrigerated transport, ozone and ultra-violet light.

In addition to specific data on such factors as proper storage temperatures and humidities, water content, freezing points, evolution of heat, length of storage life, rate of heat transfer, specific heat, temperature rise in storage and amount of heat absorbed, the pages on refrigeration and freezing of foods give information on methods, problems and equipment.

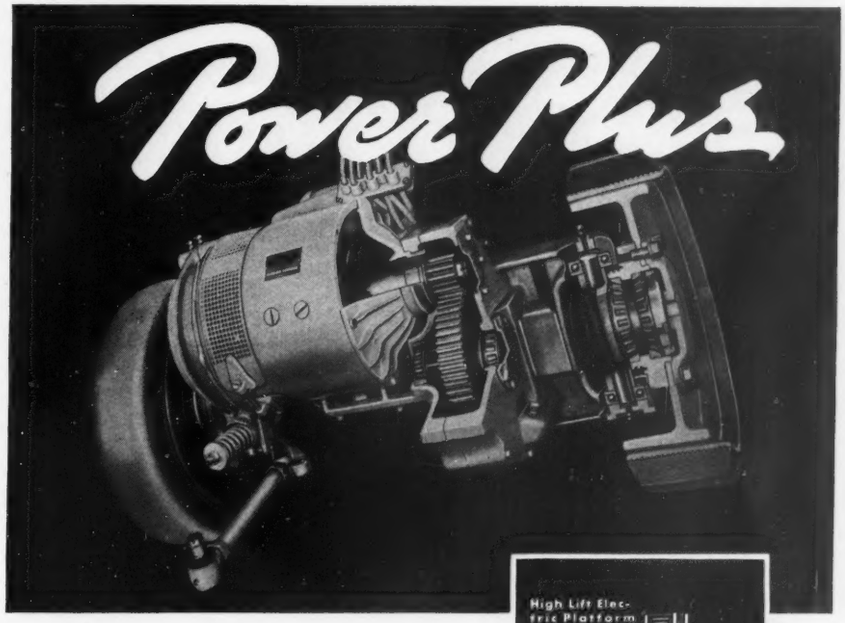
In preparing the new edition of the book, not only was new information included to bring the work up to date, but many chapters were rewritten. A practical new feature of the book is the inclusion at the end of a number of chapters of specification tables, giving the dimensions, capacities and other facts about existing equipment. The purpose is to save the reader a lengthy search through the trade literature for facts he wants quickly.

FAN ENGINEERING. Edited by Richard D. Madison. Published by Buffalo Forge Co., Buffalo, N. Y., 1938. 739 pages; 4½x6⅞ in.; Fabricoid. Price, $4.

This is the fourth edition of a book conceived and edited by W. H. Carrier in 1914 when he was chief engineer for Buffalo Forge Co. It is an engineer's handbook. Part I of the handbook pertains to the physics of air, covering the properties of air, humidity, heat, fluid flow, proportioning the flow through pipes, air flow in the fan and sound. Part II deals with air conditioning and other fan applications and covers heating and ventilation.

Among the more than 120 pages of new material in this edition is much of interest to the food engineer. For instance, there are data on air conditioning, drying, dust elimination and exhausting and conveying.

FEDERAL TAX LAW WITH EXPLANATORY DIGEST; REVENUE ACT OF 1938. Published by Prentice-Hall, Inc., 70 Fifth Ave., New York, N. Y., 1938. 166 pages, 6x9¼ in.; paper. Price, $1. Contained in this publication is a copy of the Revenue Act of 1938 with an index, plus an explanatory digest of the law and an index to the digest.



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PATENTS

Moisture Content in Relatively Dry Materials Adjusted to Desired Level by Subjecting Material to High Vacuum, Admitting Steam and Then Breaking Vacuum by Admission of Air Supersaturated With Moisture—Marcus A. Hirschl, Chicago, and Charles J. Merriam, Winnetka, Ill., to Guardite Corp. No. 2,139,681. Dec. 13, 1938.

Pears Pealed, Cored and Split by Mechanical Means—Maurice Reinstein, San Francisco, Calif., to Food Machinery Corp., San Jose, Calif. No. 2,139,695. Dec. 13, 1938.

Egg Whites Forced Under Pressure and in Continuous Stream Between Surfaces of a Stationary and a Rapidly Rotating Unit to be Made Thinner and Separated From Undesired Substances—Marvin C. Reynolds to Emulsol Corp., Chicago, Ill. No. 2,139,696. Dec. 13, 1938.

Fruit Peeled, Cored and Split by Automatic Mechanical Means—Albert R. Thompson and William de Back to Food Machinery Corp., San Jose, Calif. No. 2,139,704. Dec. 13, 1938.

Egg Meats Protected Against Separation of Moisture During Thawing by Being Mixed With a Water-Soluble Edible Gum and Acidified Coagulated Egg Previous to Freezing—Samuel Tranin to Tranin Egg Products Co., Kansas City, Mo. No. 2,139,705. Dec. 13, 1938.

Ice Cream Made Smooth by the Presence of Approximately 5 Per Cent Alcohol by Volume Without Addition of Other Stabilizing Agents—Aaron London, Brooklyn, N. Y. No. 2,139,836. Dec. 13, 1938.

Dried Fruit Made Pliable in Cellular Texture and Moisture Content Uniformly Distributed by Mechanical Working or Kneading Until Fruit Meat is Freed From Attachment to Pit—Henri Daniel Rey, Papeete, Tahiti, to the Anglo California National Bank of San Francisco, San Francisco, Calif. No. 2,139,915. Dec. 13, 1938.

Milk Sterilized by Heating While in Motion to Above 150 C. Under Greater Than Atmospheric Pressure and Suddenly Releasing Pressure to Allow Milk to Expand or Flash With a Release of Water Vapor and a Concentration of Milk Solids—Verne Hass, Heverle-Louvain, Belgium. No. 2,140,011. Dec. 13, 1938.

Fruits in Their Natural State Frozen by Spraying With a Refrigerant Consisting of Sugar and Juice of Fruit—Mikail T. Zarotschenzeff to Z Pack Corp., New York, N. Y. No. 2,140,043. Dec. 13, 1938.

Meat Cooled to Freezing Temperatures on Exterior Portion Allowed to Temper to Obtain a Rigidity Which Will Facilitate Slicing—Harry H. McKee to Swift & Co., Chicago, Ill. No. 2,140,162. Dec. 13, 1938.

Meat Cooked and Smoked in Container Fitted With Cover Which Permits Juices to Rise Over Cover, Come in Contact with Smoke, and be Reabsorbed Upon Chilling—Harry H. McKee to Industrial Patents Corp., Chicago, Ill. No. 2,140,163. Dec. 13, 1938.

Sausage Casings Tenderized by Partial Mechanical Rupturing Through Treatment With an Expansible Fluid—Rex W. Reeve, Palos Park, Ill., to Industrial Patents Corp., Chicago, Ill. No. 2,140,166. Dec. 13, 1938.

Beer Packaged in Bottles From Which Air is Driven by Inert Gas Before Filling—James Kantor to Liquid Carbonic Corp., Chicago, Ill. No. 2,140,187. Dec. 13, 1938.

Water Freed From or Reduced in Algae Content by Treatment With Equimolecular Amounts of a Water-Soluble Copper Salt and a Water-Soluble Ammonium Salt—Gail J. Fink, La Grange, Ill., to National Aluminate Corp., Chicago, Ill. No. 2,140,401. Dec. 13, 1938.

Nuts Cracked by Mechanical Means—Delbert La Ferney, Pine Bluff, Ark. No. 2,140,428. Dec. 13, 1938.

Meat Tenderized by a Mixture of a Proteolytic Enzyme and Acid Hydrolysis Products of Vegetable Proteins—Hugh E. Allen, Evanston, Ill., one-half to Albert G. McCaleb, Evanston, Ill. No. 2,140,781. Dec. 20, 1938.

Fruit and Vegetable Food Materials Mixed With a Binding Agent to Permit Spreading Over a Drying Surface and Retention of Sheet or Continuous Film Form When Removed From Drying Surface in Concentrated State—William W. Cowgill, Fairfield, Conn., to Sardik Inc., Jersey City, N. J. No. 2,140,788. Dec. 20, 1938.

Soya Oil Deodorized and Stabilized by Heating Under Reduced Pressure With About 0.5 Per Cent by Weight of an Aliphatic Polyhydroxy Reagent—Albert K. Epstein, Harold L. Reynolds and Myron L. Hartley to Emulsol Corp., Chicago, Ill. No. 2,140,793. Dec. 20, 1938.

Soya Oil Deodorized and Stabilized by Heating Under Reduced Pressure With Less Than 0.1 Per Cent by Weight of a Sugar—Albert K. Epstein and Myron L. Hartley, to Albert K. Epstein, Chicago, Ill. No. 2,140,794. Dec. 20, 1938.

Canned Milk Sterilized in Chamber Under Steam Pressure Without Loss of Pressure During Moving of Cans Into and From Chamber and With Agitation—William E. Mitton, Shawano, Wis. No. 2,141,089. Dec. 20, 1938.

Peaches Mechanically Pitted Preliminary to Being Cut in Half From Blossom End—Frank Chekian, Modesto, Calif. No. 2,141,204. Dec. 27, 1938.

Legumes Macerated in Water Which is Replaced by a Caramel Solution Prior to Cooking in Preparation of Pre-Cooked Products—Walter J. Robinson, one-third to Charles H. Stocking and one-third to Carlos A. Reading, Ann Arbor, Mich. No. 2,141,364. Dec. 27, 1938.

Sugar Juices and Similar Liquids Freed From Suspended and Flocculent Solids in Circular Tank Having Conical Base and Super-Imposed Trays Upon the Surface of Which Smooth Scrapers Are Driven From a Rotating Central Shaft Fitted to Open and Close Valve in Apex and Permit Introduction of Steam in Puffs From a Nozzle—Niels Breinholt Bach, Vestervig, Denmark. No. 2,141,371. Dec. 27, 1938.

Yeast Plasmolyzed With the Addition of 10 Per Cent by Weight of Ethyl Acetate Then Autolyzed by the Addition of Sodium Phosphate to a pH of 6.3-6.6 to be Mixed With a Vegetable Material Having a High Content of Degradable Protein to Form a Degraded Protein Product by Holding at a Temperature of Approximately 36 Deg. C. and at a pH of 6.3 to 6.6—Charles Weizmann, London, England. No. 2,141,455. Dec. 27, 1938.

Starch Made From Corn in System Which Permits Reuse of Extraction Water for Steeping of Corn—Samuel Shurback, North Kansas City, Mo., to Corn Products Refining Co., New York, N. Y. No. 2,141,562. Dec. 27, 1938.

Moisture Content of Air in Bake Oven and Similar Chambers Regulated to Desired Level by Recirculating Heated Air From Chamber Through Water and Into Chamber by Mechanical Means—Francis Herbert Bonner, Bristol, England. No. 2,141,591. Dec. 27, 1938.

Cheese Made by Adding About 5 Per Cent Starter to Milk to Produce an Acidity Exceeding 0.22 Per Cent and Further Treating the Batch so That the Whey Will Have an Acidity of Below 0.17 Per Cent at the End of the Cheese-Making Process—William D. Saunders, Blacksburg, Va. No. 2,141,698. Dec. 27, 1938.

Peanut Butter Packaged in a Container of Flexible Construction Which Permits Bulging and Shrinking Under Thermal Changes Without Rupture or Separation of the Body of the Package From Its Inner Surface Layers— Joseph L. Rosefield, Alameda, Calif. No. 2,141,725. Dec. 27, 1938.

Bread Carried From Slicer Operated From Drive Shaft of Bread Wrapping Machine by a Continuous Conveyor Driven From Same Shaft at a Constant Speed—Lester Ferenci to American Machine & Foundry Co., Brooklyn, N. Y. No. 2,141,904. Dec. 27, 1938.

Vegetable Oils Heated in Chamber Having Suction Outlet at Upper End for Volatile Products and Discharge Outlet at Lower End While Flowing in an Even Film From a Distributor Trough Over a Vertical Series of Horizontal Oil-Heating Tubes Inside the Chamber—Joseph Stewart, Elmhurst, N. Y. No. 2,141,941. Dec. 27, 1938.

Bread Loaves Fed Through Slicing Machine by a Cam Actuated Means for Bringing Them To Slicer at a Relatively High Speed and Carrying Them Through Slicer at a Relatively Low Speed—Robert J. Beutel to American Machine & Foundry Co., Brooklyn, N. Y. No. 2,141,947. Dec. 27, 1938.

Marshmallow Made Containing Sugar With High Moisture Absorption and Retention Properties—Louis W. Anderson, Toledo, Ohio. No. 2,142,088. Jan. 3, 1939.

Dry Casein Washed With an Organic Solvent for Removal of Lipoids—Forest H. Clickner, to Kraft-Phenix Cheese Corp., Chicago, Ill. No. 2,142,093. Jan. 3, 1939.

Bread Dough Dusted With Flour by Mechanical Means During Molding Operation—Emil W. Plambeck to Baker Perkins Co., Inc., Saginaw, Mich. No. 2,142,373. Jan. 3, 1939.

Tamales and the Like Made and Wrapped in a Continuous Manner by Mechanical Means—Felix L. White, Dallas, Tex. No. 2,142,468. Jan. 3, 1939.

Eggs Mixed With Fatty Acid Ester of Glycerine Containing at Least One Free Glycerine Hydroxy Group Preparatory to Freezing—Benjamin R. Harris and Marvin C. Reynolds to The Emulsol Corp., Chicago, Ill. No. 2,142,510. Jan. 3, 1939.

Egg Yolks Mixed With a Proportion of Hydrophilic Lipin and Frozen—Benjamin R. Harris and Marvin C. Reynolds, to The Emulsol Corp., Chicago, Ill. No. 2,142,511. Jan. 3, 1939.

Gelatinous Materials Dried on a Batch Basis During a Plurality of Steps in a Closed System—Thomas K. Lowry, to Darling & Co., Chicago, Ill. No. 2,142,568. Jan. 3, 1939.

Vegetables Pulped in a Machine Consisting in Part of a Stationary Screen Having the Form of a Truncated Cone and a Horizontal Rotating Shaft Fitted With Series of Paddles for Agitating and Breaking-up the Vegetable Material—Stacey B. Lindley, to Indiana Canning Machinery Co., Indianapolis, Ind. No. 2,142,649. Jan. 3, 1939.

Cream-Like Product Made From Mixture of Sweet Milk and Cream by Adding Approximately 0.5 Per Cent of Gelatine Dissolved in Equal Parts of Boiling Water and Agitating at 170 Deg. F. Until Gelatine is Dispersed, Cooling to Approximately 50 Deg. F. and Agitating for About 8 Hours—Carlton B. McLane, Venice, Calif. No. 2,142,650. Jan. 3, 1939.

Cream Kept Sweet at Ordinary Room Temperature by Addition of 7 Per Cent Sodium Chloride, Subsequently Freed From Salt by Adding Milk and Subjecting to Temperature of Approximately 120 Deg. F. Preparatory to Concentrating to Plastic Cream and Later Reconstructed to Desired Butter Fat Content by Adding Fresh Milk, Pasteurizing, and Lowering Temperature—Owen E. Williams, Arlington, Va., to People of the United States. No. 2,142,864. Jan. 3, 1939.

Flour Packed Firmly in Container Following Removal of Entrapped Air During Passage Through Packer Tube—Daniel Belcher, to Bemis Bro. Bag Co., Minneapolis, Minn. No. 2,142,990. Jan. 10, 1939.

Peanuts Held in Resiliently Walled Grooves During Blanching by Mechanical Means—Jonathan Markley, Maurice D. Woodruff, and William Mechlin to the Bauer Bro. Co., Springfield, Ohio. No. 2,143,020. Jan. 10, 1939.

Milk Concentrated or Dried by Passage in Thin Sheet Over Plurality of Alternate Hot and Cold Rolls and Trays Counter-Current to the Flow of the Stream of Air—Harry I. Andrews, South Norwalk, Conn. No. 2,143,256. Jan. 10, 1939.

Butter Printed in Machine Jacketed to Prevent Condensation of Air Moisture on Outer Walls of Continuous Feed Channel—Henry H. Doering, Chicago, Ill. No. 2,143,304. Jan. 10, 1939.